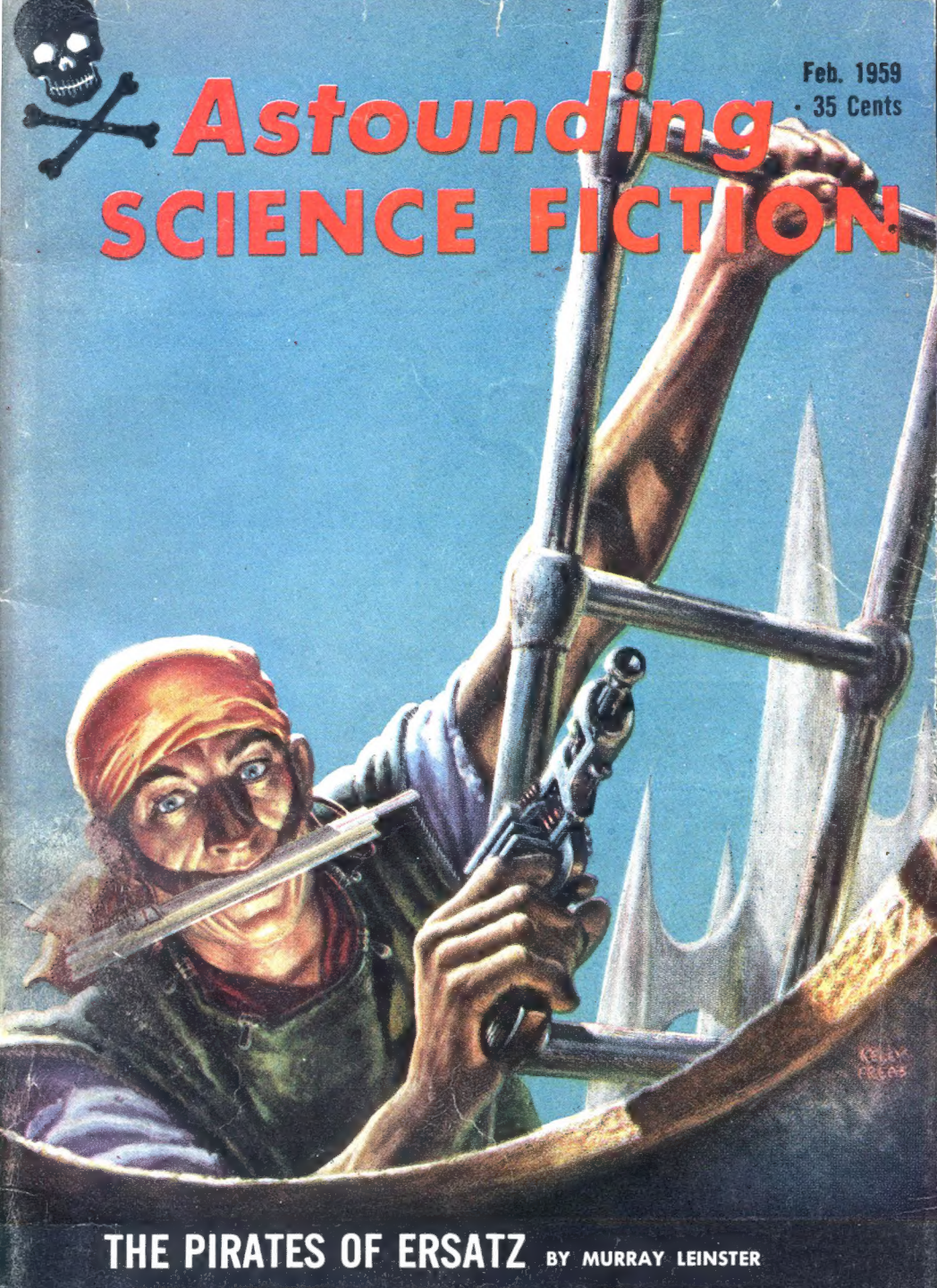
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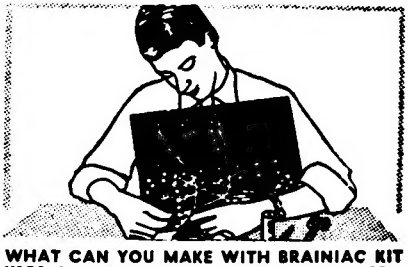

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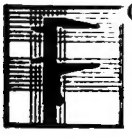
NON-ESCAPE LITERATURE



OR most of the years I've been editing this magazine, the various non-science fictioneers who have, at one time or another, deigned to investigate this odd-ball phenomenon, have reported on it as a peculiar form of "escape literature." For all of those years, that's intensely irked me. Science fiction, in my opinion, is not, was not, and will not be an escape literature.

I'm beginning to see, though, that the various psychologists, sociologists, litterateurs, et cetera, et al., who have reported on it as an escape literature did have some reason for their statements.

What's finally brought that home to me is the reactions that have followed the launching of Sputnik—and, to a slower time scale, the explosion at Hiroshima.

Most of us in science fiction felt that the introduction of the atomic bomb, and the nuclear power reactors, validating the concepts we had been presenting for years, would bring a rise in the science-fiction field.

It did . . . for a few months. And that was followed by a marked decline, which swept out of the field quite a few magazines that had hastily tried to "get into the act."

The reactions to Sputnik have been more rapid, and, therefore, more readily perceptible and correlatable. There was, again, a sudden rise in interest in science fiction . . . and there is, now, an even more marked dropping of the science-fiction interest. A number of the magazines have been very heavily hit.

I think, now, I know why.

Imagine a man who came across an old, Fifteenth Century *Grim-*

moire, full of magical formulas and incantations, and directions for summoning demons. Intrigued and amused by the old superstitions, the pompous ridiculousness of the things the old boys believed, he shows it to a number of friends. They decide it'll be a wonderful stunt for a Halloween party, and go through the ancient rigmarole for summoning a Demon.

And there is the Demon.

Only because it was just a lot of ridiculous flubdubbery, the amateur magicians didn't bother to draw the protective spell of the pentacle. They thought the old boys were kidding . . .

I think the people of the United States thought we were kidding, too. And then . . . there was Sputnik. And we hadn't bothered with the protective spell of the pentacle; all we had was the Pentagon.

I think they thought we were kidding. That nuclear weapons and space flight were amusing ideas to play with . . . nonsense, of course, but amusing nonsense . . .

Apparently, they thought that science fiction *was* an escape literature, and read it as such.

It happens that science fiction's core is just about the only *non*-escape literature available to the general public today. Secret military reports of course are non-escape literature; they discuss satellite stations, bases on the Moon, antigravity devices and the like. They're being discussed in those reports because the men who write them find themselves grimly, terribly, forced to face the woeful reality that things change, and new factors come into action. That there is no security in knowing all the answers to all the known forces . . . because new forces arise.

The essence of "main stream literature" is that There Are Eternal Truths And Nothing Really Changes.

Sure, the Fundamental Things Remain . . . but their value changes. Instincts several hundred million years old remain in Man . . . but they no longer constitute the dominant force in Man. Man still has a sex instinct—but it no longer dominates him so that he is driven to rape any available female. The Ancient Fundamentals make the entire body of mainstream literature—which is, today, almost one hundred per cent purely escape literature. The soft, almost formless, nearly pointless stories found in the mass-circulation magazines are a wonderful retreat from the reality that is somewhat more fundamental than the ones they choose to consider.

It's nicer to say that evolution is based on the survival of the fittest; it's more honest to recognize that it is based on the elimination, the culling out, of the incompetent. That the Universe is not cruel, but it is quite definitely ruthless. You're allowed a weakness . . . if you pay for it with a greater strength, but the payment must be laid on the line, not promised sometime when it's convenient.

Furthermore, we can't buy the

Universe; we can't purchase clear title to it. We can only rent space, and the rent on the top-floor space we happen to prefer is simply "achieve more than anyone else in the building does—and that means more than you yourself did last year."

When we fail with that rent, we lose tenure; we join the rest of the culls that Evolution keeps removing.

You don't find anything of that theme in the main-stream literature; it's an uncomfortable lump that wouldn't be nice in an escape literature.

So quite a few people took to reading science fiction and fantasy, because they thought both were fantasy—escape literature about safely, comfortably impossible things like atomic bombs and vampires and orbital satellite rockets and werewolves.

When Hiroshima winked out of existence, some of them were sufficiently disturbed to go back to reading about less unpleasant, more immediate, "realer" things like problems of being fired by the boss for incompetence. But they still thought we were kidding—that it was just bad luck that those weird, and therefore safe, imaginings happened to come almost true.

Besides, it was *our* atomic bomb, wasn't it? So it wasn't quite so bad . . . it was our own, private, well-guarded secret.

But Nature is, of course, a blabbermouth; she'll tell anybody who asks the right questions. The real effect of learning that science fiction wasn't kidding about atomic weapons came when it became manifest that it was *not* our private, vest-pocket secret.

Test Mike was quite disturbing, too. And radioactive fall-out in your own backyard, your own local home dairy delivering milk that made the scintillometers tick off the counts.

Probably nothing is so deeply disturbing as having a nice, safe, fantasy wake up, stretch immense muscles, yawn, and start looking around . . . all on its own, and not controlled by your imagination any more.

The first published discussion of breeder reactors appeared in the pages of this magazine; that was in 1946, and we weren't kidding. The first published descriptions and discussions of thermonuclear bombs appeared simultaneously in this magazine, and its companion magazine, *Air Trails*. That item specified the use of lithium hydride, triggered by uranium, and suggested a twenty-five mile radius of destruction.

So that's a fantasy escape-literature, eh? We were just kidding, huh?

You'll also find a discussion of deuterium-deuterium fusion reaction for power back in 1939, also in this magazine. The basic reasons for using that reaction were outlined; they're the same reasons that underlie the present research for hydrogen-fusion power.

Incidentally, the world will never use uranium, thorium, or plutonium

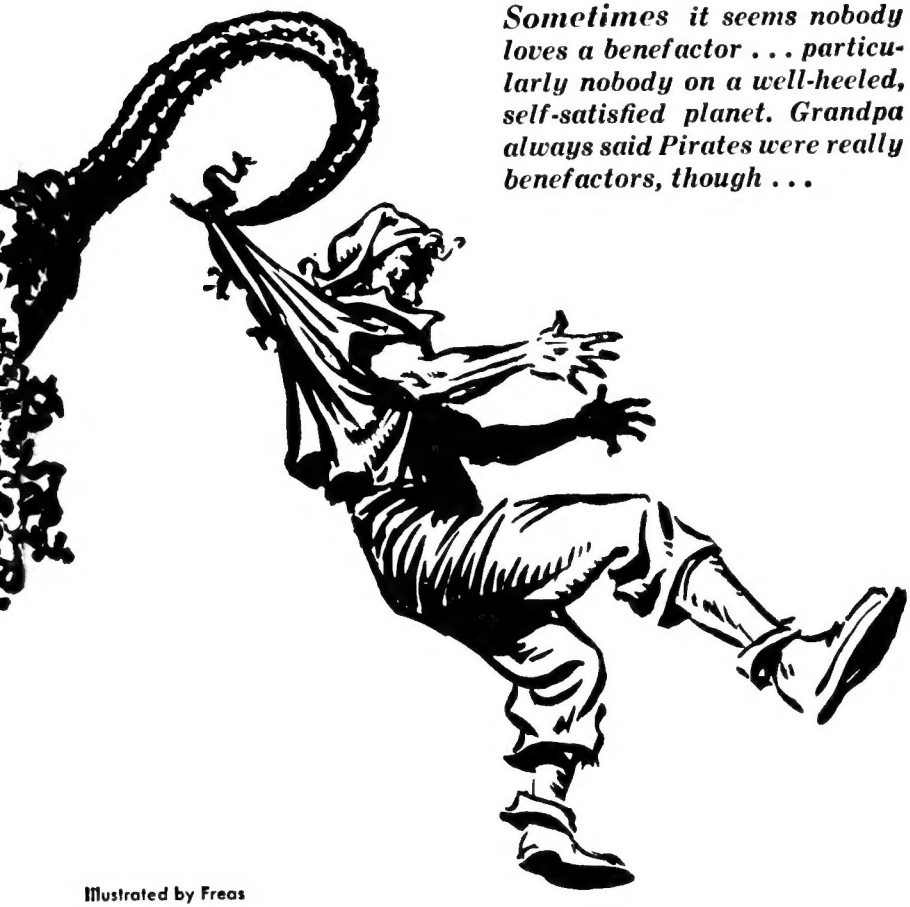
(*Continued on page* 161)

THE..

...PIRATES OF ERSATZ

BY MURRAY LEINSTER

Sometimes it seems nobody loves a benefactor . . . particularly nobody on a well-heeled, self-satisfied planet. Grandpa always said Pirates were really benefactors, though . . .



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I

T WAS not mere impulsive action when Bron Hoddan started for the planet Walden by stowing away on a ship that had come to his native planet to hang all his relatives. He'd planned it long before. It was a long-cherished and carefully worked out scheme. He didn't expect the hanging of his relatives, of course. He knew that they'd act grieved and innocent, and give proof that they were simple people leading blameless lives. They'd make their would-be executioners feel ashamed and apologetic for having thought evil of them, and as soon as the strangers left they'd return to their normal way of life, which was piracy. But while this was going on, Bron Hoddan stowed away on the menacing vessel. Presently he arrived at its home world. But his ambition was to reach Walden, so he set about getting there. It took a long time because he had to earn ship-passage from one solar system to another, but he held to his idea. Walden was the most civilized planet in that part of the galaxy. On Walden, Hoddan intended, in order (a) to achieve splendid things as an electronic engineer, (b) to grow satisfactorily rich, (c) to marry a delightful girl, and (d) end his life a great man. But he had to spend two years trying to arrange even the first.

On the night before the police broke in the door of his room, though, accomplishment seemed imminent. He went to bed and slept soundly. He was calmly sure that his ambitions were about to be realized. At practically any instant his brilliance would be discovered and he'd be well-to-do, his friend Derec would admire him, and even Nedda would probably decide to marry him right away. She was the delightful girl. Such prospects made for good sleeping.

And Walden was a fine world to be sleeping on. Outside the capital city its spaceport received shipments of luxuries and raw materials from halfway across the galaxy. Its landing grid reared skyward and tapped the planet's ionosphere for power with which to hoist ships to clear space and pluck down others from emptiness. There was commerce and manufacture and wealth and culture, and Walden modestly admitted that its standard of living was the highest in the Nurmi Cluster. Its citizens had no reason to worry about anything but a supply of tranquilizers to enable them to stand the boredom of their lives.

Even Hoddan was satisfied, as of the moment. On his native planet there wasn't even a landing grid. The few, battered, cobbled ships the inhabitants owned had to take off precariously on rockets. They came back blackened and sometimes more battered still, and sometimes they were accompanied by great hulls whose crews and passengers were mysteriously missing. These extra ships had to be landed on their

emergency rockets, and, of course, couldn't take off again, but they always vanished quickly just the same. And the people of Zan, on which Hoddan had been born, always affected innocent indignation when embattled other spacecraft came and furiously demanded that they be produced.

There were some people who said that all the inhabitants of Zan were space pirates and ought to be hung and compared with such a planet, Walden seemed a very fine place indeed. So on a certain night Bron Hoddan went confidently to bed and slept soundly until three hours after sunrise. Then the police broke in his door.

They made a tremendous crash in doing it, but they were in great haste. The noise waked Hoddan, and he blinked his eyes open. Before he could stir, four uniformed men grabbed him and dragged him out of bed. They searched him frantically for anything like a weapon. Then they stood him against a wall with two stun-pistols on him, and the main body of cops began to tear his room apart, looking for something he could not guess. Then his friend Derec came hesitantly in the door and looked at him remorsefully. He wrung his hands.

"I had to do it, Bron," he said agitatedly. "I couldn't help doing it!"

Hoddan blinked at him. He was dazed. Things didn't become clearer when he saw that a cop had slit open his pillow and was sifting its contents through his fingers. Another cop was ripping the seams of his mattress to look inside. Somebody else was going carefully through a little pile of notes that Nedda had written, squinting at them as if he were afraid of seeing something he'd wish he hadn't.

"What's happened?" asked Hoddan blankly. "What's this about?"

Derec said miserably:

"You killed someone, Bron. An innocent man! You didn't mean to, but you did, and . . . it's terrible!"

"Me kill somebody? That's ridiculous!" protested Hoddan.

"They found him outside the powerhouse," said Derec bitterly. "Outside the Mid-Continent station that you—"

"Mid-Continent? Oh!" Hoddan was relieved. It was amazing how much he was relieved. He'd had an unbelieving fear for a moment that somebody might have found out he'd been born and raised on Zan -which would have ruined everything. It was almost impossible to imagine, but still it was a great relief to find out he was only suspected of a murder he hadn't committed. And he was only suspected because his first great achievement as an electronic engineer had been discovered. "They found the thing at Mid-Continent, eh? But I didn't kill anybody. And there's no harm done. The thing's been running two weeks, now. I was going to the Power Board in a couple of days." He addressed the police. "I know what's up, now," he said.

"Give me some clothes and let's go get this straightened out."

A cop waved a stun-pistol at him.

"One word out of line, and—*pfft!*"

"Don't talk, Bron!" said Derec in panic. "Just keep quiet! It's bad enough! Don't make it worse!"

A cop handed Hoddan a garment. He put it on. He became aware that the cop was scared. So was Derec. Everybody in the room was scared except himself. Hoddan found himself incredulous. People didn't act this way on super-civilized, highest-peak-of-culture Walden.

"Who'd I kill?" he demanded. "And why?"

"You wouldn't know him, Bron," said Derec mournfully. "You didn't mean to do murder. But it's only luck that you killed only him instead of everybody!"

"Everybody—" Hoddan stared.

"No more talk!" snapped the nearest cop. His teeth were chattering. "Keep quiet or else!"

Hoddan shut up. He watched—dressing the while as his clothing was inspected and then handed to him—while the cops completed the examination of his room. They were insanely thorough, though Hoddan hadn't the least idea what they might be looking for. When they began to rip up the floor and pull down the walls, the other cops led him outside.

There was a fleet of police trucks in the shaded street outdoors. They piled him in one, and four cops climbed after him, keeping stun-pistols trained on him during the maneuver. Out of the corner of his eye he saw Derec climbing into another truck. The entire fleet sped away together. The whole affair had been taken with enormous seriousness by the police. Traffic was detoured from their route. When they swung up on an elevated expressway, with raised-up trees on either side, there was no other vehicle in sight. They raced on downtown.

They rolled off the expressway. They rolled down a cleared avenue. Hoddan recognized the Detention Building. Its gate swung wide. The truck he rode in went inside. The gate closed. The other trucks went away—rapidly. Hoddan alighted and saw that the grim gray wall of the courtyard had a surprising number of guards mustered to sweep the open space with gunfire if anybody made a suspicious movement.

He shook his head. Nobody had mentioned Zan, so this simply didn't make sense. His conscience was wholly clear except about his native planet. This was insanity! He went curiously into the building and into the hearing room. His guards, there, surrendered him to courtroom guards and went away with almost hysterical haste. Nobody wanted to be near him.

Hoddan stared about. The courtroom was highly informal. The justice sat at an ordinary desk. There were comfortable chairs. The air was clean. The atmosphere was that of a conference room in which reasonable men could discuss differences of

opinion in calm leisure. Only on a world like Walden would a prisoner brought in by police be dealt with in such surroundings.

Derec came in by another door, with a man Hoddan recognized as the attorney who'd represented Nedda's father in certain past interviews. There'd been no mention of Nedda as toying with the thought of marrying Hoddan then, of course. It had been strictly business. Nedda's father was Chairman of the Power Board, a director of the Planetary Association of Manufacturers, a committeeman of the Banker's League, and other important things. Hoddan had been thrown out of his offices several times. He now scowled ungraciously at the lawyer who had ordered him thrown out. He saw Derec wringing his hands.

An agitated man in court uniform came to his side.

"I'm the Citizen's Representative," he said uneasily. "I'm to look after your interests. Do you want a personal lawyer?"

"Why?" asked Hoddan. He felt splendidly confident.

"The charges— Do you wish a psychiatric examination—claiming no responsibility?" asked the Representative anxiously. "It might . . . it might really be best—"

"I'm not crazy," said Hoddan, "though this looks like it."

The Citizen's Representative spoke to the justice.

"Sir, the accused waives psychiatric examination, without prejudice to a later claim of no responsibility."

Nedda's father's attorney watched with bland eyes. Hoddan said impatiently:

"Let's get started so this will make some sense! I know what I've done. What monstrous crime am I charged with?"

"The charges against you," said the justice politely, "are that on the night of Three Twenty-seven last, you, Bron Hoddan, entered the fenced-in grounds surrounding the Mid-Continent power receptor station. It is charged that you passed two no-admittance signs. You arrived at a door marked 'Authorized Personnel Only.' You broke the lock of that door. Inside, you smashed the power receptor taking broadcast power from the air. This power receptor converts broadcast power for industrial units by which two hundred thousand men are employed. You smashed the receptor, imperiling their employment." The justice paused. "Do you wish to challenge any of these charges as contrary to fact?"

The Citizen's Representative said hurriedly:

"You have the right to deny any of them, of course."

"Why should I?" asked Hoddan. "I did them! But what's this about me killing somebody? Why'd they tear my place apart looking for something? Who'd I kill, anyhow?"

"Don't bring that up!" pleaded the Citizen's Representative. "Please don't bring that up! You will be much, much better off if that is not mentioned!"

"But I didn't kill anybody!" insisted Hoddan.

"Nobody's said a word about it," said the Citizen's Representative, jittering. "Let's not have it in the record! The record has to be published." He turned to the justice. "Sir, the facts are conceded as stated."

"Then," said the justice to Hoddan, "do you choose to answer these charges at this time?"

"Why not?" asked Hoddan. "Of course!"

"Proceed," said the justice.

Hoddan drew a deep breath. He didn't understand why a man's death, charged to him, was not mentioned. He didn't like the scared way everybody looked at him. But—

"About the burglary business," he said confidently. "What did I do in the power station before I smashed the receptor?"

The justice looked at Nedda's father's attorney.

"Why," said that gentleman amiably, "speaking for the Power Board as complainant, before you smashed the standard receptor you connected a device of your own design across the power-leads. It was a receptor unit of an apparently original pattern. It appears to have been a very interesting device."

"I'd offered it to the Power Board," said Hoddan, with satisfaction, "and I was thrown out. You had me thrown out! What did it do?"

"It substituted for the receptor you smashed," said the attorney. "It continued to supply some two hundred million kilowatts for the Mid-Continent industrial area. In fact, your crime was only discovered because the original receptor—naturally—had to be set to draw peak power at all times, with the unused power wasted by burning carbon. Your device adjusted to the load and did not burn carbon. So when the attendants went to replace the supposedly burned carbon and found it unused, they discovered what you had done."

"It saved carbon, then," said Hoddan triumphantly. "That means it saved money. I saved the Power Board plenty while that was connected. They wouldn't believe I could. Now they know. I did!"

The justice said:

"Irrelevant. You have heard the charges. In legal terms, you are charged with burglary, trespass, breaking and entering, unlawful entry, malicious mischief, breach of the peace, sabotage, and endangering the employment of citizens. Discuss the charges, please!"

"I'm telling you!" protested Hoddan. "I offered the thing to the Power Board. They said they were satisfied with what they had and wouldn't listen. So I proved what they wouldn't listen to! That receptor saved them ten thousand credits' worth of carbon a week! It'll save half a million credits a year in every power station that uses it! If I know the Power Board, they're going right on using it while they arrest me for putting it to work!"

The courtroom, in its entirety, visibly shivered.

"Aren't they?" demanded Hoddan belligerently.

"They are not," said the justice, tight-lipped. "It has been smashed in its turn. It has even been melted down."

"Then look at my patents!" insisted Hoddan. "It's stupid—"

"The patent records," said the justice with unnecessary vehemence, "have been destroyed. Your possessions have been searched for copies. Nobody will ever look at your drawings again—not if they are wise!"

"Wha-a-at?" demanded Hoddan incredulously. "Wha-a-at?"

"I will amend the record of this hearing before it is published," said the justice shakily. "I should not have made that comment. I ask permission of the Citizen's Representative to amend."

"Granted," said the Representative before he had finished.

The justice said quickly:

"The - charges - have - been - admitted - by - the - defendant. Since the - complainant - does - not - wish - punitive - action - taken - against - him—"

"He'd be silly if he did," grunted Hoddan.

"And - merely - wishes - security - against - repetition - of - the - offense. I - rule - that - the - defendant - may - be - released - upon - posting - suitable - bond - for - good - behavior - in - the - future. That - is, he - will - be - required - to - post - bond - which - will - be - forfeited - if - he - ever - again - enters - a - power - station - enclosure - passes - no - trespassing - signs - ignores - no - admittance - signs - and/or - smashes - apparatus - belonging - to - the - complainant."

"All right," said Hoddan indignantly. "I'll raise it somehow. If they're too stupid to save money—How much bond?"

"The - court - will - take - it - under - advisement - and - will - notify - the - defendant - within - the - customary - two - hours," said the justice at top speed. He swallowed. "The - defendant - will - be - kept - in - close - confinement - until - the - bond - is - posted. The - hearing - is - ended."

He did not look at Hoddan. Courtroom guards put stun-pistols against Hoddan's body and ushered him out.

Presently his friend Derec came to see him in the tool-steel cell in which he had been placed. Derec looked white and stricken.

"I'm in trouble because I'm your friend, Bron," he said miserably, "but I asked permission to explain things to you. After all, I caused your arrest. I urged you not to connect up your receptor without permission!"

"I know," growled Hoddan, "but there are some people so stupid you have to show them everything. I didn't realize that there are people so stupid you can't show them anything."

"You . . . showed something you

didn't intend," said Derec miserably. "Bron, I . . . I have to tell you. When they went to charge the carbon bins at the power station, they . . . they found a dead man, Bron!"

Hoddan sat up.

"What's that?"

"Your machine—killed him. He was outside the building at the foot of a tree. Your receptor killed him through a stone wall! It broke his bones and killed him . . . Bron—" Derec wrung his hands. "At some stage of power-drain your receptor makes deathrays!"

Hoddan had had a good many shocks today. When Derec arrived, he'd been incredulously comparing the treatment he'd received and the panic about him, with the charges made against him in court. They didn't add up. This new, previously undisclosed item left him speechless. He goggled at Derec, who fairly wept.

"Don't you see?" asked Derec pleadingly. "That's why I had to tell the police it was you. We can't have deathrays! The police can't let anybody go free who knows how to make them! This is a wonderful world, but there are lots of crackpots. They'll do anything! The police daren't let it even be suspected that deathrays can be made! That's why you weren't charged with murder. People all over the planet would start doing research, hoping to satisfy all their grudges by committing suicide for all their enemies with themselves! For the sake of civilization your secret has to be suppressed —and you with it. It's terrible for you, Bron, but there's nothing else to do!"

Hoddan said dazedly:

"But I only have to put up a bond to be released!"

"The . . . the justice," said Derec tearfully, "didn't name it in court, because it would have to be published. But he's set your bond at fifty million credits! Nobody could raise that for you, Bron! And with the reason for it what it is, you'll never be able to get it reduced."

"But anybody who looks at the plans of the receptor will know it can't make deathrays!" protested Hoddan blankly.

"Nobody will look," said Derec tearfully. "Anybody who knows how to make it will have to be locked up. They checked the patent examiners. They've forgotten. Nobody dared examine the device you had working. They'd be jailed if they understood it! Nobody will ever risk learning how to make deathrays—not on a world as civilized as this, with so many people anxious to kill everybody else. You have to be locked up forever, Bron. You have to!"

Hoddan said inadequately:

"Oh."

"I beg your forgiveness for having you arrested," said Derec in abysmal sorrow, "but I couldn't do anything but tell—"

Hoddan stared at his cell wall. Derec went away weeping. He was an admirable, honorable, not-too-bright young man who had been Hoddan's only friend.

Hoddan stared blankly at nothing. As an event, it was preposterous, and yet it was wholly natural. When in the course of human events somebody does something that puts somebody else to the trouble of adjusting the numb routine of his life, the adjustee is resentful. The richer he is and the more satisfactory he considers his life, the more resentful he is at any change, however minute. And of all the changes which offend people, changes which require them to think are most disliked.

The high brass in the Power Board considered that everything was moving smoothly. There was no need to consider new devices. Hoddan's drawings and plans had simply never been bothered with, because there was no recognized need for them. And when he forced acknowledgment that his receptor worked, the unwelcome demonstration was highly offensive in itself. It was natural, it was inevitable, it should have been infallibly certain that any possible excuse for not thinking about the receptor would be seized upon. And a single dead man found near the operating demonstrator . . . If one assumed that the demonstrator had killed him, —why one could react emotionally, feel vast indignation, frantically command that the device and its inventor be suppressed together, and go on living happily without doing any thinking or making any other change in anything at all.

Hoddan was appalled. Now that it had happened, he could see that it had to. The world of Walden was at the very peak of human culture. It had arrived at so splendid a plane of civilization that nobody could imagine any improvement—unless a better tranquilizer could be designed to make it more endurable. Nobody ever really wants anything he didn't think of for himself. Nobody can want anything he doesn't know exists—or that he can't imagine to exist. On Walden nobody wanted anything, unless it was relief from the tedium of ultra-civilized life. Hoddan's electronic device did not fill a human need; only a technical one. It had, therefore, no value that would make anybody hospitable to it.

And Hoddan would spend his life in jail for failing to recognize the fact.

He revolted, immediately. *He* wanted something! He wanted out. And because he was that kind of man he put his mind to work devising something he wanted, simply and directly, without trying to get it by furnishing other people with what they turned out not to want. He set about designing his escape. With his enforced change in viewpoint, he took the view that he must seem, at least, to give his captors and jailers and—as he saw it—his persecutors what they wanted.

They would be pleased to have him dead, provided their consciences were clear. He built on that as a foundation.

Very shortly before nightfall he performed certain cryptic actions. He

unraveled threads from his shirt and put them aside. There would be a vision-lens in the ceiling of his cell, and somebody would certainly notice what he did. He made a light. He put the threads in his mouth, set fire to his mattress, and laid down calmly upon it. The mattress was of excellent quality. It would smell very badly as it smoldered.

It did. Lying flat, he kicked convulsively for a few seconds. He looked like somebody who had taken poison. Then he waited.

It was a rather long time before his jailer came down the cell corridor, dragging a fire hose. Hoddan had been correct in assuming that he was watched. His actions had been those of a man who'd anticipated a possible need to commit suicide, and who'd had poison in a part of his shirt for convenience. The jailer did not hurry, because if the inventor of a deathray committed suicide, everybody would feel better. Hoddan had been allowed a reasonable time in which to die.

He seemed impressively dead when the jailer opened his cell door, dragged him out, removed the so-far-unscorched other furniture, and set up the fire hose to make an aerosol fog which would put out the fire. He went back to the corridor to wait for the fire to be extinguished.

Hoddan crowned him with a stool, feeling an unexpected satisfaction in the act. The jailer collapsed.

He did not carry keys. The system was for him to be let out of this corridor by a guard outside. Hoddan growled and took the fire hose. He turned its nozzle back to make a stream instead of a mist. Water came out at four hundred pounds pressure. He smashed open the corridor door with it. He strolled through and bowled over a startled guard with the same stream. He took the guard's stun-pistol. He washed open another door leading to the courtyard. He marched out, washed down two guards who sighted him, and took the trouble to flush them across the pavement until they wedged in a drain opening. Then he thoughtfully reset the hose to fill the courtyard with fog, climbed into the driver's seat of the truck that had brought him here—it was probably the same one—and smashed through the gateway to the street outside. Behind him, the courtyard filled with dense white mist.

He was free, but only temporarily. Around him lay the capital city of Walden—the highest civilization in this part of the galaxy. Trees lined its ways. Towers rose splendidly toward the skies, with thousands of less ambitious structures in between. There were open squares and parkways and malls, and it did not smell like a city at all. But he wasn't loose three minutes before the communicator in the truck squawked the all-police alarm for him.

It was to be expected. All the city would shortly be one enormous mantrap, set to catch Bron Hoddan. There was only one place on the planet, in fact, where he could be safe—and he wouldn't be safe there

if he'd been officially charged with murder. But since the police had tactfully failed to mention murder, he could get at least breathing-time by taking refuge in the Interstellar Embassy.

He headed for it, bowling along splendidly. The police truck hummed on its way for half a mile; three-quarters. The great open square before the Embassy became visible. The Embassy was not that of a single planet, of course. By pure necessity every human-inhabited world was independent of all others, but the Interstellar Diplomatic Service represented humanity at large upon each individual globe. Its ambassador was the only person Hoddan could even imagine as listening to him, and that because he came from off-planet, as Hoddan did. But he mainly counted upon a breathing-space in the Embassy, during which to make more plans as yet unformed and unformable. He began, though, to see some virtues in the simple, lawless, piratical world in which he had spent his childhood.

Another police truck rushed frantically toward him down a side street. Stun-pistols made little pinging noises against the body of his vehicle. He put on more speed, but the other truck overtook him. It ranged alongside, its occupants waving stern commands to halt. And then, just before it swerved to force him off the highway, he swung instead and drove it into a tree. It crashed thunderously. One of his own wheels collapsed. He drove on with the crumpled wheel producing an up-and-down motion that threatened to make him seasick. Then he heard yelling behind him. The cops had piled out of the truck and were in pursuit on foot.

The tall, rough-stone wall of the Embassy was visible, now, beyond the monument to the First Settlers of Walden. He leaped to the ground and ran. Stun-pistol bolts, a little beyond their effective range, stung like fire. They spurred him on.

The gate of the Embassy was closed. He bolted around the corner and swarmed up the conveniently rugged stones of the wall. He was well aloft before the cops spotted him. Then they fired at him industriously and the charges crackled all around him.

But he'd reached the top and had both arms over the parapet before a charge hit his legs and stunned them —paralyzed them. He hung fast, swearing at his bad luck.

Then hands grasped his wrists. A white-haired man appeared on the other side of the parapet. He took a good, solid grip, and heaved. He drew Hoddan over the breast-high top of the wall and let him down to the walkway inside it.

"A near thing, that!" said the white-haired man pleasantly. "I was taking a walk in the garden when I heard the excitement. I got to the wall-top just in time." He paused, and added, "I do hope you're not just a common murderer with the police after him! We can't offer

asylum to such—only a breathing-space and a chance to start running again. But if you're a political offender—"

Hoddan began to try to rub sensation and usefulness back into his legs. Feeling came back, and was not pleasant.

"I'm the Interstellar Ambassador," said the white-haired man politely.

"My name," said Hoddan bitterly, "is Bron Hoddan and I'm framed for trying to save the Power Board some millions of credits a year!" Then he said more bitterly: "If you want to know, I ran away from Zan to try to be a civilized man and live a civilized life. It was a mistake! I'm to be permanently jailed for using my brains!"

The ambassador cocked his head thoughtfully to one side.

"Zan?" he said. "The name Hoddan fits to that somehow. Oh, yes! Space-piracy! People say the people of Zan capture and loot a dozen or so ships a year, only there's no way to prove it on them. And there's a man named Hoddan who's supposed to head a particularly ruffianly gang."

"My grandfather," said Hoddan defiantly. "What are you going to do about it? I'm outlawed! I've defied the planetary government! I'm disreputable by descent, and worst of all I've tried to use my brains!"

"Deplorable!" said the ambassador mildly. "I don't mean outlawry is deplorable, you understand, or defiance of the government, or being disreputable. But trying to use one's brains is bad business! A serious offense! Are your legs all right now? Then come on down with me and I'll have you given some dinner and some fresh clothing and so on. Offhand," he added amiably, "it would seem that using one's brains would be classed as a political offense rather than a criminal one on Walden. We'll see."

Hoddan gaped up at him.

"You mean there's a possibility that—"

"Of course!" said the ambassador in surprise. "You haven't phrased it that way, but you're actually a rebel. A revolutionist. You defy authority and tradition and governments and such things. Naturally the Interstellar Diplomatic Service is inclined to be on your side. What do you think it's for?"

II

In something under two hours Hoddan was ushered into the ambassador's office. He'd been refreshed, his torn clothing replaced by more respectable garments, and the places where stun-pistols had stung him soothed by ointments. But, more important, he'd worked out and firmly adopted a new point of view.

He'd been a misfit at home on Zan because he was not contented with the humdrum and monotonous life of a member of a space-pirate community. Piracy was a matter of dangerous take-offs in cranky rocketships, to be followed by weeks or months of tedious and uncomfort-

able boredom in highly unhealthy re-breathed air. No voyage ever contained more than ten seconds of satisfactory action—and all space-fighting took place just out of the atmosphere of a possibly embattled planet, because you couldn't intercept a ship at cruising speed between the stars. Regardless of the result of the fighting, one had to get away fast when it was over, lest overwhelming force swarm up from the nearby world. It was intolerably devoid of anything an ambitious young man would want.

Even when one had made a good prize—with the lifeboats darting frantically for ground—and after one got back to Zan with a captured ship, even then there was little satisfaction in a piratical career. Zan had not a large population. Piracy couldn't support a large number of people. Zan couldn't attempt to defend itself against even single heavily-armed ships that sometimes came in passionate resolve to avenge the disappearance of a rich freighter or a fast new liner. So the people of Zan, to avoid hanging, had to play innocent. They had to be convincingly simple, harmless folk who cultivated their fields and led quiet, blameless lives. They might loot, but they had to hide their booty where investigators would not find it. They couldn't really benefit by it. They had to build their own houses and make their own garments and grow their own food. So life on Zan was dull. Piracy was not profitable in the sense that one could live well by it. It simply wasn't a trade for a man like Hoddan.

So he'd abandoned it. He'd studied electronics in books from looted passenger-ship libraries. Within months after arrival on a law-abiding planet, he was able to earn a living in electronics as an honest trade.

And that was unsatisfactory. Law-abiding communities were no more thrilling or rewarding than piratical ones. A payday now and then didn't make up for the tedium of labor. Even when one had money there wasn't much to do with it. On Walden, to be sure, the level of civilization was so high that many people needed psychiatric treatment to stand it, and neurotics vastly outnumbered more normal folk. And on Walden electronics was only a trade like piracy, and no more fun.

He should have known it would be this way. His grandfather had often discussed this frustration in human life.

"Us humans," it was his grandfather's habit to say, "don't make sense! There's some of us that work so hard they're too tired to enjoy life. There's some that work so hard at enjoying it that they don't get no fun out of it. And the rest of us spend our lives complainin' that there ain't any fun in it anyhow. The man that over all has the best time of any is one that picks out something he hasn't got a chance to do, and spends his life raisin' hell because he's stopped from doing it. When"—and here Hoddan's grand-

father tended to be emphatic—"he wouldn't think much of it if he could!"

What Hoddan craved, of course, was a sense of achievement, of doing things worth doing, and doing them well. Technically there were opportunities all around him. He'd developed one, and it would save millions of credits a year if it were adopted. But nobody wanted it. He'd tried to force its use, he was in trouble, and now he could complain justly enough, but despite his grandfather he was not the happiest man he knew.

The ambassador received him with a cordial wave of the hand.

"Things move fast," he said cheerfully. "You weren't here half an hour before there was a police captain at the gate. He explained that an excessively dangerous criminal had escaped jail and been seen to climb the Embassy wall. He offered very generously to bring some men in and capture you and take you away—with my permission, of course. He was shocked when I declined."

"I can understand that," said Hoddan.

"By the way," said the ambassador. "Young men like yourself— Is there a girl involved in this?"

Hoddan considered.

"A girl's father," he acknowledged, "is the real complainant against me."

"Does he complain," asked the ambassador, "because you want to marry her, or because you don't?"

"Neither," Hoddan told him. "She hasn't quite decided that I'm worth defying her rich father for."

"Good!" said the ambassador. "It can't be too bad a mess while a woman is being really practical. I've checked your story. Allowing for differences of viewpoint, it agrees with the official version. I've ruled that you are a political refugee, and so entitled to sanctuary in the Embassy. And that's that."

"Thank you, sir," said Hoddan.

"There's no question about the crime," observed the ambassador, "or that it is primarily political. You proposed to improve a technical process in a society which considers itself beyond improvement. If you'd succeeded, the idea of change would have spread, people now poor would have gotten rich, people now rich would have gotten poor, and you'd have done what all governments are established to prevent. So you'll never be able to walk the streets of this planet again in safety. You've scared people."

"Yes, sir," said Hoddan. "It's been an unpleasant surprise to them, to be scared."

The ambassador put the tips of his fingers together.

"Do you realize," he asked, "that the whole purpose of civilization is to take the surprises out of life, so one can be bored to death? That a culture in which nothing unexpected ever happens is in what is called its Golden Age? That when nobody can even imagine anything happening

unexpectedly, that they later fondly refer to that period as the Good Old Days?"

"I hadn't thought of it in just those words, sir—"

"It is one of the most-avoided facts of life," said the ambassador. "Government, in the local or planetary sense of the word, is an organization for the suppression of adventure. Taxes are, in part, the insurance premiums one pays for protection against the unpredictable. And you have offended against everything that is the foundation of a stable and orderly and damnably tedious way of life—against civilization, in fact."

Hoddan frowned.

"Yet you've granted me asylum—"

"Naturally!" said the ambassador. "The Diplomatic Service works for the welfare of humanity. That doesn't mean stuffiness. A Golden Age in any civilization is always followed by collapse. In ancient days savages came and camped outside the walls of super-civilized towns. They were unwashed, unmannerly, and unsanitary. Super-civilized people refused even to think about them! So presently the savages stormed the city walls and another civilization went up in flames."

"But now," objected Hoddan, "there are no savages."

"They invent themselves," the ambassador told him. "My point is that the Diplomatic Service cherishes individuals and causes which battle stuffiness and complacency and Golden Ages and monstrous things like that. Not thieves, of course. They're degradation, like body lice. But rebels and crackpots and revolutionaries who prevent hardening of the arteries of commerce and furnish wholesome exercise to the body politic—they're worth cherishing!"

"I . . . think I see, sir," said Hoddan.

"I hope you do," said the ambassador. "My action on your behalf is pure diplomatic policy. To encourage the dissatisfied is to insure against universal satisfaction—which is lethal. Walden is in a bad way. You are the most encouraging thing that has happened here in a long time. And you're not a native."

"No-o-o," agreed Hoddan. "I come from Zan."

"Never mind." The ambassador turned to a stellar atlas. "Consider yourself a good symptom, and valued as such. If you could start a contagion, you'd deserve well of your fellow citizens. Savages can always invent themselves. But enough of apology from me. Let us set about your affairs." He consulted the atlas. "Where would you like to go, since you must leave Walden?"

"Not too far, sir—"

"The girl, eh?" The ambassador did not smile. He ran his finger down a page. "The nearest inhabited worlds, of course, are Krim and Darth. Krim is a place of lively commercial activity, where an electronics engineer should easily find employment. It is said to be progressive and there is much organized research—"

"I wouldn't want to be a kept engineer, sir," said Hoddan apologetically. "I'd rather . . . well . . . putter on my own."

"Impractical, but sensible," commented the ambassador. He turned a page. "There's Darth. Its social system is practically feudal. It's technically backward. There's a landing grid, but space exports are skins and metal ingots and practically nothing else. There is no broadcast power. Strangers find the local customs difficult. There is no town larger than twenty thousand people, and few approach that size. Most settled places are mere villages near some feudal castle, and roads are so few and bad that wheeled transport is rare."

He leaned back and said in a detached voice:

"I had a letter from there a couple of months ago. It was rather arrogant. The writer was one Don Loris, and he explained that his dignity would not let him make a commercial offer, but an electronic engineer who put himself under his protection would not be the loser. He signed himself prince of this, lord of that, baron of the other thing and claimant to the dukedom of something else. Are you interested? No kings on Darth, just feudal chiefs."

Hoddan thought it over.

"I'll go to Darth," he decided. "It's bound to be better than Zan, and it can't be worse than Walden."

The ambassador looked impassive. An Embassy servant came in and offered an indoor communicator. The ambassador put it to his ear. After a moment he said:

"Show him in." He turned to Hoddan. "You did kick up a storm! The Minister of State, no less, is here to demand your surrender. I'll counter with a formal request for an exit-permit. I'll talk to you again when he leaves."

Hoddan went out. He paced up and down the other room into which he was shown. Darth wouldn't be in a Golden Age! He was wiser now than he'd been this same morning. He recognized that he'd made mistakes. Now he could see rather ruefully how completely improbable it was that anybody could put across a technical device merely by proving its value, without making anybody want it. He shook his head regretfully at the blunder.

The ambassador sent for him.

"I've had a pleasant time," he told Hoddan genially. "There was a beautiful row. You've really scared people, Hoddan! You deserve well of the republic! Every government and every person needs to be thoroughly terrified occasionally. It limbers up the brain."

"Yes, sir," said Hoddan. "I've—"

"The planetary government," said the ambassador with relish, "insists that you have to be locked up with the key thrown away. Because you know how to make deathrays. I said it was nonsense, and you were a political refugee in sanctuary. The Minister of State said the Cabinet would consider removing you forci-

bly from the Embassy if you weren't surrendered. I said that if the Embassy was violated no ship would clear for Walden from any other civilized planet. They wouldn't like losing their off-planet trade! Then he said that the government would not give you an exit-permit, and that he would hold me personally responsible if you killed everybody on Walden, including himself and me. I said he insulted me by suggesting that I'd permit such shenanigans. He said the government would take an extremely grave view of my attitude, and I said they would be silly if they did. Then he went off with great dignity—but shaking with panic—to think up more nonsense."

"Evidently," said Hoddan in relief, "you believe me when I say that my gadget doesn't make deathrays."

The ambassador looked slightly embarrassed.

"To be honest," he admitted, "I've no doubt that you invented it inde-

pendently, but they've been using such a device for half a century in the Cetis cluster. They've had no trouble."

Hoddan winced.

"Did you tell the Minister that?"

"Hardly," said the ambassador. "It would have done you no good. You're in open revolt and have performed overt acts of violence against the police. But also it was impolite enough for me to suggest that the local government was stupid. It would have been most undiplomatic to prove it."

Hoddan did not feel very proud, just then.

"I'm thinking that the cops—quite unofficially—might try to kidnap me from the Embassy. They'll deny that they tried, especially if they manage it. But I think they'll try."

"Very likely," said the ambassador. "We'll take precautions."

"I'd like to make something—not lethal—just in case," said Hoddan. "If you can trust me not to make deathrays, I'd like to make a generator of odd-shaped microwaves. They're described in textbooks. They ionize the air where they strike. That's all. They make air a high-resistance conductor. Nothing more than that."

The ambassador said:

"There was an old-fashioned way to make ozone . . ." When Hoddan nodded, a little surprised, the ambassador said: "By all means go ahead. You should be able to get parts from your room vision-receiver. I'll have some tools given you." Then he added: "Diplomacy has to understand the things that control events. Once it was social position. For a time it was weapons. Then it was commerce. Now it's technology. But I wonder how you'll use the ionization of air to protect yourself from kidnapers! Don't tell me! I'd rather try to guess."

He waved his hand in cordial dismissal and an Embassy servant showed Hoddan to his quarters. Ten minutes later another staff man brought him tools such as would be needed for work on a vision set. He was left alone.

He delicately disassembled the set in his room and began to put some of the parts together in a novel but wholly rational fashion. The science of electronics, like the science of mathematics, had progressed away beyond the point where all of it had practical applications. One could spend a lifetime learning things that research had discovered in the past, and industry had never found a use for. On Zan, industriously reading pirated books, Hoddan hadn't known where utility stopped. He'd kept on learning long after a practical man would have stopped studying to get a paying job.

Any electronic engineer could have made the device he now assembled. It only needed to be wanted—and apparently he was the first person to want it. In this respect it was like the receptor that had gotten him into trouble. But as he put the small parts

together, he felt a certain loneliness. A man Hoddan's age needs to have some girl admire him from time to time. If Nedda had been sitting cross-legged before him, listening raptly while he explained, Hoddan would probably have been perfectly happy. But she wasn't. It wasn't likely she ever would be. Hoddan scowled.

Inside of an hour he'd made a hand-sized, five-watt, wave-guide projector of waves of eccentric form. In the beam of that projector, air became ionized. Air became a high-resistance conductor comparable to nichrome wire, when and where the projector sent its microwaves.

He was wrapping tape about the pistol grip when a servant brought him a scribbled note. It had been handed in at the Embassy gate by a woman who fled after leaving it. It looked like Nedda's handwriting. It read like Nedda's phrasing. It appeared to have been written by somebody in a highly emotional state. But it wasn't quite—not absolutely—convincing.

He went to find the ambassador. He handed over the note. The ambassador read it and raised his eyebrows.

"Well?"

"It could be authentic," admitted Hoddan.

"In other words," said the ambassador, "you are not sure that it is a booby trap—an invitation to a date with the police?"

"I'm not sure," said Hoddan. "I think I'd better bite. If I have any illusions left after this morning, I'd better find it out. I thought Nedda liked me quite a lot."

"I make no comment," observed the ambassador. "Can I help you in any way?"

"I have to leave the Embassy," said Hoddan, "and there's a practically solid line of police outside the walls. Could I borrow some old clothes, a few pillows, and a length of rope?"

Half an hour later a rope uncoiled itself at the very darkest outside corner of the Embassy wall. It dangled down to the ground. This was at the rear of the Embassy enclosure. The night was bright with stars, and the city's towers glittered with many lights. But here there was almost complete blackness and that silence of a city which is sometimes so companionable.

The rope remained hanging from the wall. No light reached the ground there. The tiny crescent of Walden's farthest moon cast an insufficient glow. Nothing could be seen by it.

The rope went up, as if it had been lowered merely to make sure that it was long enough for its purpose. Then it descended again. This time a figure dangled at its end. It came down, swaying a little. It reached the blackest part of the shadow at the wall's base. It stayed there.

Nothing happened. The figure rose swiftly, hauled up in rapid pullings of the rope. Then the line came down again and again a figure de-

scended. But this figure moved. The rope swayed and oscillated. The figure came down a good halfway to the ground. It paused, and then descended with much movement to two-thirds of the way from the top.

There something seemed to alarm it. It began to rise with violent writhings of the rope. It climbed—

There was a crackling noise. A stun-pistol. The figure seemed to climb more frantically. More cracklings. Half a dozen—a dozen sharp, snapping noises. They were stun-pistol charges and there were tiny sparks where they hit. The dangling figure seemed convulsed. It went limp, but it did not fall. More charges poured into it. It hung motionless halfway up the wall of the Embassy.

Movements began in the darkness. Men appeared, talking in low tones and straining their eyes toward the now motionless figure. They gathered underneath it. One went off at a run, carrying a message. Someone of authority arrived, panting. There was more low-toned argument. More and still more men appeared. There were forty or fifty figures at the base of the wall.

One of those figures began to climb the rope hand over hand. He reached the motionless object. He swore in a shocked voice. He was shushed from below. He let the figure drop. It made next to no sound when it landed.

Then there was a rushing, as the guards about the Embassy went furiously back to their proper posts to keep anybody from slipping out. Two men remained swearing bitterly over a dummy made of old clothes and pillows. But their profanity was in vain.

Hoddan was then some blocks away. He suffered painful doubt about the note ostensibly from Nedda. The guards about the Embassy would have tried to catch him in any case, but it did seem very plausible that the note had been sent him to get him to try to get down the wall. On the other hand, a false descent of a palpably dummylike dummy had been plausible, too. He'd drawn all the guards to one spot by his seeming doubt and by testing out their vigilance with a dummy. The only thing improbable in his behavior had been that after testing their vigilance with a dummy, he'd made use of it.

A fair distance away, he turned sedately into a narrow lane between buildings. This paralleled another lane serving the home of a girl friend of Nedda's. The note had named the garden behind that other girl's home as a rendezvous. But Hoddan was not going to that garden. He wanted to make sure. If the cops had forged the note—

He judged his position carefully. If he climbed this tree,—hm-m-m . . . Kind of the city-planners of Walden to use trees so lavishly—if he climbed this tree he could look into the garden where Nedda in theory waited in tears. He climbed it. He sat astride a thick limb in scented dark-

ness and considered further. Presently he brought out his five-watt projector. There was deepest darkness hereabouts. Trees and shrubbery were merely blacker than their surroundings. But there was reason for suspicion.

Neither in the house of Nedda's girl friend, nor in the nearer house between, was there a single lighted window.

Hoddan adjusted the wave-guide and pressed the stud of his instrument. He pointed it carefully into the nearer garden.

A man grunted in a surprised tone. There was a stirring. A man swore startledly. The words seemed inappropriate to a citizen merely breathing the evening air.

Hoddan frowned. The note from Nedda seemed to have been a forgery. To make sure, he readjusted the wave-guide to project a thin but fan-shaped beam. He aimed again. Painstakingly, he traversed the area in which men would have been posted to jump him, in the event that the note was forged. If Nedda were there, she would feel no effect. If police lay in wait, they would notice. At once.

They did. A man howled. Two men yelled together. Somebody bellowed. Somebody squealed. Someone, in charge of the flares made ready to give light for the police, was so startled by a strange sensation that he jerked the cord. An immense, cold-white brilliance appeared. The garden where Nedda definitely was not present became bathed in incandescence. Light spilled over the wall of one garden into the next and disclosed a squirming mass of police in the nearer garden also. Some of them leaped wildly and ungracefully while clawing behind them. Some stood still and struggled desperately to accomplish something to their rear, while others gazed blankly at them until Hoddan swung his instrument their way, also.

A man tore off his pants and swarmed over the wall to get away from something intolerable. Others imitated him, save in the direction of their flight. Some removed their trousers before they fled, but others tried to get them off while fleeing. Those last did not fare too well. Mostly they stumbled and other men fell over them, when both fallen and fallen-upon uttered hoarse and profane lamentations—they howled to the high heavens.

Hoddan let the confusion mount past any unscrambling, and then slid down the tree and joined in the rush. With the glare in the air behind him, he only feigned to stumble over one figure after another. Once he grunted as he scorched his own fingers. But he came out of the lane with a dozen stun-pistols, mostly uncomfortably warm, as trophies of the ambush.

As they cooled off he stowed them away in his belt and pockets, strolling away down the tree-lined street. Behind him, cops realized their trouserless condition and appealed plaintively to householders to notify headquarters of their state.

Hoddan did not feel particularly disillusioned, somehow. It occurred to him, even, that this particular event was likely to help him get off of Walden. If he was to leave against the cops' will, he needed to have them at less than top efficiency. And men who have had their pants scorched off them are not apt to think too clearly. Hoddan felt a certain confidence increase in his mind. He'd worked the thing out very nicely. If ionization made air a high-resistance conductor, then an ionizing beam would make a high-resistance short between the power terminals of a stun-pistol. With the power a stun-pistol carried, that short would get hot. So would the pistol. It would get hot enough, in fact, to scorch cloth in contact with it. Which had happened.

If the effect had been produced in the soles of policemen's feet, Hoddan would have given every cop a hotfoot. But since they carried their stun-pistols in their hip-pockets—

The thought of Nedda diminished his satisfaction. The note could be pure forgery, or the police could have learned about it through the treachery of the servant she sent to the Embassy with it. It would be worthwhile to know. He headed toward the home of her father. If she were loyal to him—why it would complicate things considerably. But he felt it necessary to find out.

He neared the spot where Nedda lived. This was an especially desirable residential area. The houses were large and gracefully designed, and the gardens were especially lush. Presently he heard music ahead—live music. He went on. He came to a place where strolling citizens had paused under the trees of the street to listen to the melody and the sound of voices that accompanied it. And the music and the festivity was in the house in which Nedda dwelt. She was having a party, on the very night of the day in which he'd been framed for life imprisonment.

It was a shock. Then there was a rush of vehicles, and police trucks were disgorging cops before the door. They formed a cordon about the house, and some knocked and were admitted in haste. Then Hoddan nodded dourly to himself.

His escape from the Embassy was now known. No less certainly, the failure of the trap Nedda's note had baited had been reported. The police were now turning the whole city into a trap for one Bron Hoddan, and they were looking first at the most probable places, then they'd search the possible places for him to be, and by the time that had been accomplished they'd have cops from other cities pouring into the city and they'd search every square inch of it for him. And certainly and positively they'd take the most urgent and infallible precautions to make sure he didn't get back into the Embassy.

It was a situation that would have appalled Hoddan only that morning. Now, though, he only shook his head sadly. He moved on. He'd gotten into trouble by trying to make an industrial civilization accept something it

didn't want—a technical improvement in a standard electronic device. He'd gotten partly out of trouble by giving his jailers what they definitely desired—the sight of him apparently a suicide in the cell in the Detention Building. He'd come out of the Embassy, again, by giving the watchers outside a view they urgently desired—a figure secretly descending the Embassy wall. He'd indulged himself at the ambuscade, but the way to get back into the Embassy . . .

It was not far from Nedda's house to a public-safety kiosk, decoratively placed on a street corner. He entered it. It was unattended, of course. It was simply an out-of-door installation where cops could be summoned or fires reported or emergencies described by citizens independently of the regular home communicators. It had occurred to Hoddan that the planetary authorities would be greatly pleased to hear of a situation, in a place, that would seem to hint at his presence. There were all sorts of public services that would be delighted to operate impressively in their own lines. There were bureaus which would rejoice in a chance to show off their efficiency.

He used his micro-wave generator —which at short enough range would short-circuit anything—upon the apparatus in the kiosk. It was perfectly simple, if one knew how. He worked with a sort of tender thoroughness, shorting this item, shorting that, giving this frantic emergency call, stating that baseless lie. When he went out of the kiosk he walked briskly toward an appointment he had made.

And presently the murmur of the city at night had new sounds added to it. They began as a faint, confused clamor at the edges of the city. The uproar moved centralward and grew louder as it came. There were clanging bells and sirens and beeper-horns warning all nonofficial vehicles to keep out of the way. On the raised-up expressway snorting metal monsters rushed with squealing excitement. On the fragrant lesser streets, small vehicles rushed with proportionately louder howlings. Police trucks poured out of their cubbyholes and plunged valiantly through the dark. Broadcast-units signaled emergency and cut off the air to make the placid ether waves available to authority.

All these noises and all this tumult moved toward a single point. The outer parts of the city regained their former quiet, save that there was less music. The broadcasts were off. But the sound of racing vehicles clamoring for right-of-way grew louder and louder, and more and more peremptory as it concentrated toward the large open square on which the Interstellar Embassy faced. From every street and avenue fire-fighting equipment poured into that square. In between and behind, hooting loudly for precedence, police trucks accompanied and fore-ran them. Emergency vehicles of all the civic bureaus appeared, all of them

with immense conviction of their importance.

It was a very large open square, that space before the Embassy. From its edge, the monument to the First Settlers in the center looked small. But even that vast plaza filled up with trucks of every imaginable variety, from the hose towers which could throw streams of water four hundred feet straight up, to the miniature trouble-wagons of Electricity Supply. Staff cars of fire and police and sanitary services crowded each other and bumped fenders with tree-surgeon trucks prepared to move fallen trees, and with public-address trucks ready to lend stentorian tones to any voice of authority.

But there was no situation except that there was no situation. There was no fire. There was no riot. There were not even stray dogs for the pound wagons to pursue, nor broken water mains for the water department technicians to shut off and repair. There was nothing for anybody to do but ask everybody else what the hell they were doing there, and presently to swear at each other for cluttering up the way.

The din of arriving horns and sirens had stopped, and a mutter of profanity was developing, when a last vehicle arrived. It was an ambulance, and it came purposefully out of a side avenue and swung toward a particular place as if it knew exactly what it was about. When its way was blocked, it hooted impatiently for passage. Its lights blinked violently red, demanding clearance. A giant fire-fighting unit pulled aside. The ambulance ran past and hooted at a cluster of police trucks. They made way for it. It blared at a gathering of dismounted, irritated truck personnel. It made its way through them. It moved in a straight line for the gate of the Interstellar Embassy.

A hundred yards from that gate, its horn blatted irritably at the car of the acting head of municipal police. That car obediently made way for it.

The ambulance rolled briskly up to the very gate of the Embassy. There it stopped. A figure got down from the driver's seat and walked purposefully in the gate.

Thereafter nothing happened at all until a second figure rolled and toppled itself out on the ground from the seat beside the ambulance driver's. That figure kicked and writhed on the ground. A policeman went to find out what was the matter.

It was the ambulance driver. Not the one who'd driven the ambulance to the Embassy gate, but the one who should have. He was bound hand and foot and not too tightly gagged. When released he swore vividly while panting that he had been captured and bound by somebody who said he was Bron Hoddan and was in a hurry to get back to the Interstellar Embassy.

There was no uproar. Those to whom Hoddan's name had meaning were struck speechless with rage. The

fury of the police was even too deep for tears.

But Bron Hoddan, back in the quarters assigned him in the Embassy, unloaded a dozen cooled-off stun-pistols from his pockets and sent word to the ambassador that he was back, and that the note ostensibly from Nedda had actually been a police trap.

Getting ready to retire, he reviewed his situation. In some respects it was not too bad. All but Nedda's share in trying to trap him, and having a party the same night . . . He stared morosely at the wall. Then he saw, very simply, that she mightn't have known even of his arrest. She lived a highly sheltered life. Her father could have had her kept completely in ignorance . . .

He cheered immediately. This would be his last night on Walden, if he were lucky, but vague plans already revolved in his mind. Yes . . . He'd achieve splendid things, he'd grow rich, he'd come back and marry that delightful girl, Nedda, and end as a great man. Already, today, he'd done a number of things worth doing, and on the whole he'd done them well.

III

When dawn broke over the capital city of Walden, the sight was appropriately glamorous. There were shining towers and curving tree-bordered ways, above which innumerable small birds flew tumultuously. The dawn, in fact, was heralded by high-pitched chirpings everywhere. During the darkness there had been a deep-toned humming sound, audible all over the city. That was the landing grid in operation out at the spaceport, letting down a twenty-thousand-ton liner from Rigel, Cetis, and the Nearer Rim. Presently it would take off for Krim, Darth, and the Coalsack Stars, and if Hoddan was lucky he would be on it. But at the earliest part of the day there was only tranquillity over the city and the square and the Interstellar Embassy.

At the gate of the Embassy enclosure, staff members piled up boxes and bales and parcels for transport to the spaceport and thence to destinations whose names were practically songs. There were dispatches to Delil, where the Interstellar Diplomatic Service had a sector headquarters, and there were packets of embassy-stamped invoices for Lohala and Tralee and Famagusta. There were boxes for Sind and Maja, and metal-bound cases for Kent. The early explorers of this part of the galaxy had christened huge suns for little villages and territories back on Earth—which less than one human being in ten thousand had ever seen.

The sound of the stacking of freight parcels was crisp and distinct in the morning hush. The dew deposited during darkness had not yet dried from the pavement of the square. Damp, unhappy figures loafed nearby. They were self-evidently secret police, as yet unrelieved after a night's vigil about the Embassy's rugged wall. They were sleepy and

their clothing stuck soggily to them, and none of them had had anything warm in his stomach for many hours. They had not, either, anything to look forward to from their superiors.

Hoddan was again in sanctuary inside the Embassy they'd guarded so ineptly through the dark. He'd gotten out without their leave, and made a number of their fellows unwilling to sit down and then made all the police and municipal authorities ridiculous by the manner of his return. The police guards about the Embassy were very positively not in a cheery mood. But one of them saw an Embassy servant he knew. He'd stood the man drinks, in times past, to establish a contact that might be useful. He summoned a smile and beckoned to that man.

The Embassy servant came briskly to him, rubbing his hands after having put a moderately heavy case of documents on top of the waiting pile.

"That Hoddan," said the plainclothesman, attempting hearty ruefulness, "he certainly put it over on us last night!"

The servant nodded.

"Look," said the plainclothesman, "there could be something in it for you if you . . . hm-m-m . . . wanted to make a little extra money."

The servant looked regretful.

"No chance," he said, "he's leaving today."

The plainclothesman jumped.

"Today?"

"For Darth," said the Embassy servant. "The ambassador's shipping him off on the space liner that came in last night."

The plainclothesman dithered.

"How's he going to get to the spaceport?"

"I wouldn't know," said the servant. "They've figured out some way. I could use a little extra money, too."

He lingered, but the plainclothesman was staring at the innocent, inviolable parcels about to leave the Embassy for distant parts. He took note of sizes and descriptions. No. Not yet. But if Hoddan was leaving he had to leave the Embassy. If he left the Embassy . . .

The plainclothesman bolted. He made a breathless report by the portable communicator set up for just such use. He told what the Embassy servant had said, and the inference to be drawn from it, the suspicions to be entertained—and there he stopped short. Orders came back to him. Orders were given in all directions. Somebody was going to distinguish himself by catching Hoddan, and undercover politics worked to decide who it should be. Even the job of guard outside the Embassy became desirable. So fresh, alert plainclothesmen arrived. They were bright-eyed and bushy-tailed, and they took over. Weary, hungry men yielded up their posts. They went home. The man who'd gotten the infallibly certain clue went home too, disgruntled because he wasn't allowed a share in the credit for Hoddan's

capture. But he was glad of it later.

Inside the Embassy, Hoddan finished his breakfast with the ambassador.

"I'm giving you," said the ambassador, "that letter to the character on Darth. I told you about him. He's some sort of nobleman and has need of an electronic engineer. On Darth they're rare to nonexistent. But his letter wasn't too specific."

"I remember," agreed Hoddan. "I'll look him up. Thanks."

"Somehow," said the ambassador, "I cherish unreasonable hopes of you, Hoddan. A psychologist would say that your group identification is low and your cyclothymia practically a minus quantity, while your ergic tension is pleasingly high. He'd mean that with reasonable good fortune you will raise more hell than most. I wish you that good fortune. And Hoddan—"

"Yes?"

"I don't urge you to be vengeful," explained the ambassador, "but I do hope you won't be too forgiving of these characters who'd have jailed you for life. You've scared them badly. It's very good for them. Anything more you can do in that line will be really a kindness, and as such will positively not be appreciated, but it'll be well worth doing . . . I say this because I like the way you plan things. And any time I can be of service—"

"Thanks," said Hoddan, "but I'd better get going for the spaceport." He'd write Nedda from Darth. "I'll get set for it."

He rose. The ambassador stood up too.

"I like the way you plan things," he repeated appreciatively. "We'll check over that box."

They left the Embassy dining room together.

It was well after sunrise when Hoddan finished his breakfast, and the bright and watchful new plainclothesmen were very much on the alert outside. By this time the sunshine had lost its early ruddy tint, and the trees about the city were vividly green, and the sky had become appropriately blue—as the skies on all human-occupied planets are. There was the beginning of traffic. Some was routine movement of goods and vehicles. But some was special.

For example, the trucks which came to carry the Embassy shipment to the spaceport. They were perfectly ordinary trucks, hired in a perfectly ordinary way by the ambassador's secretary. They came trundling across the square and into the Embassy gate. The ostentatiously loafing plainclothesmen could look in and see the waiting parcels loaded on them. The first truckload was quite unsuspicious. There was no package in the lot which could have held a man in even the most impossibly cramped of positions.

But the police took no chances. Ten blocks from the Embassy the cops stopped it and verified the licenses and identities of the driver and his helper. This was a moder-

ately lengthy business. While it went on, plainclothesmen worked over the packages in the truck's body and put stethoscopes to any of more than one cubic foot capacity.

They waved the truck on. Meanwhile the second truck was loading up. And the watching, ostensible loafers saw that nearly the last item to be put on it was a large box which hadn't been visible before. It was carried with some care, and it was marked fragile, and it was put into place and wedged fast with other parcels.

The plainclothesmen looked at each other with anticipatory glee. One of them reported the last large box with almost lyric enthusiasm. When the second truck left the Embassy with the large box, a police truck came innocently out of nowhere and just happened to be going the same way. Ten blocks away, again the truck load of Embassy parcels was flagged down and its driver's license and identity was verified. A plainclothesman put a stethoscope on the questionable case. He beamed, and made a suitable signal.

The truck went on, while zestful, Machiavelian plans took effect.

Five blocks farther, an unmarked empty truck came hurtling out of a side street, sideswiped the truck from the Embassy, and went careening away down the street without stopping. The trailing police truck made no attempt at pursuit. Instead, it stopped helpfully by the truck which had been hit. A wheel was hopelessly gone. So uniformed police, with conspicuously happy expressions, cleared a space around the stalled truck and stood guard over the parcels under diplomatic seal. With eager helpfulness, they sent for other transportation for the Embassy's shipment.

A sneeze was heard from within the mass of guarded freight, and the policemen shook hands with each other. When substitute trucks came —there were two of them—they loaded one high with Embassy parcels and sent it off to the spaceport with their blessing. There remained just one, single, large-sized box to be put on the second vehicle. They bumped it on the ground, and a startled grunt came from within.

There was an atmosphere of innocent enjoyment all about as the police tenderly loaded this large box on the second truck they'd sent for, and festooned themselves about it as it trundled away. Strangely, it did not head directly for the spaceport. The police carefully explained this to each other in loud voices. Then some of them were afraid the box hadn't heard, so they knocked on it. The box coughed, and it seemed hilariously amusing to the policemen that the contents of a freight parcel should cough. They expressed deep concern and—addressing the box—explained that they were taking it to the Detention Building, where they would give it some cough medicine.

The box swore at them, despairingly. They howled with childish laughter, and assured the box that after they had opened it and given

it cough medicine they would close it again very carefully—leaving the diplomatic seal unbroken—and deliver it to the spaceport so it could go on its way.

The box swore again, luridly. The truck which carried it hastened. The box teetered and bumped and jounced with the swift motion of the vehicle that carried it and all the police around it. Bitter, enraged, and highly unprintable language came from within.

The police were charmed. Even so early in the morning they seemed inclined to burst into song. When the Detention Building gate opened for it, and closed again behind it, there was a welcoming committee in the courtyard. It included a jailer with a bandaged head and a look of vengeful satisfaction on his face, and no less than three guards who had been given baths by a high-pressure hose when Bron Hoddan departed from his cell. They wore unamiable expressions.

And then, while the box swore very bitterly, somebody tenderly loosened a plank—being careful not to disturb the diplomatic seal—and pulled it away with a triumphant gesture. Then all the police could look into the box. And they did.

Then there was dead silence, except for the voice that came from a two-way communicator set inside.

"And now," said the voice from the box—and only now did anybody notice what the muffling effect of the boards had hidden, that it was a speaker-unit which had sworn and coughed and sneezed— *"we take our leave of the planet Walden and its happy police force, who wave to us as our space-liner lifts toward the skies. The next sound you hear will be that of their lamentations at our departure."*

But the next sound was a howl of fury. The police were very much disappointed to learn that Hoddan hadn't been in the box, but only one-half of a two-way communication pair, and that Hoddan had coughed and sneezed and sworn at them from the other instrument somewhere else. Now he signed off.

The space liner was not lifting off just yet. It was still solidly aground in the center of the landing grid. Hoddan had bade farewell to his audience from the floor of the ambassador's ground-car, which at that moment was safely within the extra-territorial circle about the spaceship. He turned off the set and got up and brushed himself off. He got out of the car. The ambassador followed him and shook his hand.

"You have a touch," said the ambassador sedately. "You seem inspired at times, Hoddan! You have a gift for infuriating constituted authority. You should plot at your art. You may go far!"

He shook hands again and watched Hoddan walk into the lift which should raise him—and did raise him —to the entrance port of the space liner.

Twenty minutes later the force fields of the giant landing grid lifted

the liner smoothly out to space. The twenty-thousand-ton vessel went out to five planetary diameters, where its Lawlor drive could take hold of relatively unstressed space. There the ship jockeyed for line, and then there was that curious, momentary disturbance of all one's sensations which was the effect of the overdrive field going on. Then everything was normal again, except that the liner was speeding for the planet Krim at something more than thirty times the speed of light.

Normality extended through all the galaxy so far inhabited by men. There were worlds on which there was peace, and worlds on which there was tumult. There were busy, zestful young worlds, and languid, weary old ones. From the Near Rim to the farthest of occupied systems, planets circled their suns, and men lived on them, and every man took himself seriously and did not quite believe that the universe had existed before he was born or would long survive his loss.

Time passed. Comets let out vast streamers like bridal veils and swept toward and around their suns. Some of them—one in ten thousand, or twenty—were possibly seen by human eyes. The liner bearing Hoddan sped through the void.

In time it made a landfall on the Planet Krim. He went aground and observed the spaceport city. It was new and bustling with tall buildings and traffic jams and a feverish conviction that the purpose of living was to earn more money this year than last. Its spaceport was chaotically busy. Hoddan had time for swift sightseeing of one city only and an estimate of what the people of such a planet would be sure they wanted. He saw slums and gracious public buildings, and went back to the spaceport and the liner which then rose upon the landing grid's force fields until Krim was a great round ball below it. Then there was again a jockeying for line, and the liner winked out of sight and was again journeying at thirty times the speed of light.

Again time passed. In one of the remoter galaxies a super-nova flamed, and on a rocky, barren world a small living thing squirmed experimentally—and to mankind the one event was just as important as the other.

But presently the liner from Krim and Walden appeared in Darth as the tiniest of shimmering pearly specks against the blue. To the north and east and west of the spaceport, rugged mountains rose steeply. Patches of snow showed here and there, and naked rock reared boldly in spurs and precipices. But there were trees on all the lower slopes, and there was not really a timberline.

The space liner increased in size, descending toward the landing grid. The grid itself was a monstrous lattice of steel, half a mile high and enclosing a circle not less in diameter. It filled much the larger part of the level valley floor, and horned *duryas* and what Hoddan later

learned were horses grazed in it. The animals paid no attention to the deep-toned humming noise the grid made in its operation.

The ship seemed the size of a pea. Presently it was the size of an apple. Then it was the size of a basketball, and then it swelled enormously and put out spidery metal legs with large splay metal feet on them and alighted and settled gently to the ground. The humming stopped.

There were shoutings. Whips cracked. Straining, horn-tossing *duryas* heaved and dragged something, very deliberately, out from between warehouses under the arches of the grid. There were two dozen of the *duryas,* and despite the shouts and whip-crackings they moved with a stubborn slowness. It took a long time for the object with the wide-tired wheels to reach a spot below the spacecraft. Then it took longer, seemingly, for brakes to be set on each wheel, and then for the draught animals to be arranged to pull as two teams against each other.

More shoutings and whip-crackings. A long, slanting, ladderlike arm arose. It teetered, and a man with a lurid purple cloak rose with it at its very end. The ship's air lock opened and a crewman threw a rope. The purple-cloaked man caught it and made it fast. From somewhere inside the ship of space the line was hauled in. The end of the landing ramp touched the sill of the air lock. Somebody made other things fast and the purple-cloaked man triumphantly entered the ship.

There was a pause. Men loaded carts with cargo to be sent to remote and unimagined planets. In the air lock, Bron Hoddan stepped to the unloading ramp and descended to the ground. He was the only passenger. He had barely reached a firm footing when objects followed him. His own ship bag—a gift from the ambassador—and then parcels, bales, boxes, and such nondescript items of freight as needed special designation. Rolls of wire. Long strings of plastic objects, strung like beads on shipping cords. Plexiskins of fluid which might be anything from wine to fuel oil in less than bulk-cargo quantities. For a mere five minutes the flow of freight continued. Darth was not an important center of trade.

Hoddan stared incredulously at the town outside one side of the grid. It was only a town—and was almost a village, at that. Its houses had steep, gabled roofs, of which some seemed to be tile and others thatch. Its buildings leaned over the narrow streets, which were unpaved. They looked like mud. And there was not a power-driven ground vehicle anywhere in sight, nor anything man made in the air.

Great carts trailed out to the unloading belt. They dumped bales of skins and ingots of metal, and more bales and more ingots. Those objects rode up to the air lock and vanished. Hoddan was ignored. He felt that without great care he might be crowded back into the reversed load-

ing belt and be carried back into the ship.

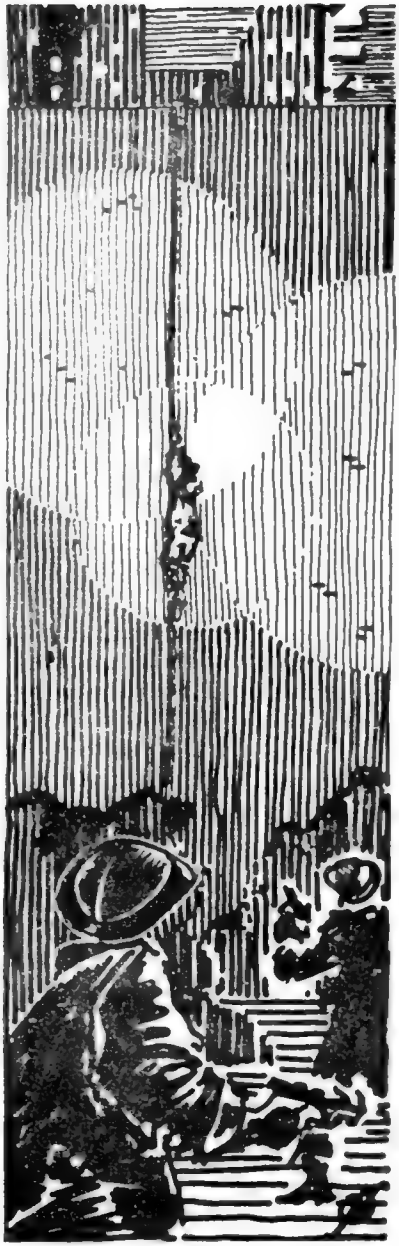
The loading process ended. The man with the purple cloak, who'd ridden the teetering belt-beam up, reappeared and came striding grandly down to ground. Somebody cast off, above. Ropes writhed and fell and dangled. The ship's air lock door closed.

There was a vast humming sound. The ship lifted sedately. It seemed to hover momentarily over the group of *duryas* and humans in the center of the grid's enclosure. But it was not hovering. It shrank. It was rising in an absolutely vertical line. It dwindled to the size of a basketball and then an apple. Then to the size of a pea. And then that pea diminished until the spaceship from Krim, Walden, Cetis, Rigel and the Nearer Rim had become the size of a dust mote and then could not be seen at all. But one knew that it was going on to Lohala and Tralee and Famagusta and the Coalsack Stars.

Hoddan shrugged and began to trudge toward the warehouses. The *durya*-drawn landing ramp began to roll slowly in the same direction. Carts and wagons loaded the stuff discharged from the ship. Creaking, plodding, with the curved horns of the *duryas* rising and falling, the wagons overtook Hoddan and passed him. He saw his ship bag on one of the carts. It was a gift from the Interstellar Ambassador on Walden. He'd assured Hoddan that there was a fund for the assistance of political refugees, and that the bag and its contents was normal. But in addition to the gift-clothing, Hoddan had a number of stun-pistols, formerly equipment of the police department of Walden's capital city.

He followed his bag to a warehouse. Arrived there, he found the bag surrounded by a group of whiskered or mustachioed Darthian characters wearing felt pants and large sheath-knives. They had opened the bag and were in the act of ferocious dispute about who should get what of its contents. Incidentally they argued over the stun-pistols, which looked like weapons but weren't because nothing happened when one pulled the trigger. Hoddan grimaced. They'd been in store on the liner during the voyage. Normally they picked up a trickle charge from broadcast power, on Walden, but there was no broadcast power on the liner, nor any on Darth. They'd leaked their charges and were quite useless. The one in his pocket would be useless, too.

He grimaced again and swerved to the building where the landing grid controls must be. He opened the door and went in. The interior was smoky and ill-smelling, but the equipment was wholly familiar. Two unshaven men—in violently colored shirts—languidly played cards. Only one, a redhead, paid attention to the controls of the landing grid. He watched dials. As Hoddan pushed his way in, he threw a switch and yawned. The ship was five diameters out from Darth, and he'd released



it from the landing grid fields. He turned and saw Hoddan.

"What the hell do you want?" he demanded sharply.

"A few kilowatts," said Hoddan. The redhead's manner was not amiable.

"Get outta here!" he barked.

The transformers and snaky cables leading to relays outside—all were clear as print to Hoddan. He moved confidently toward an especially understandable panel, pulling out his stun-pistol and briskly breaking back the butt for charging. He shoved the pistol butt to contact with two terminals devised for another purpose, and the pistol slipped for an instant and a blue spark flared.

"Quit that!" roared the red-headed man. The unshaven men pushed back from their game of cards. One of them stood up, smiling unpleasantly.

The stun-pistol clicked. Hoddan withdrew it from charging-contact, flipped the butt shut, and turned toward the three men. Two of them charged him suddenly—the redhead and the unpleasant smiler.

The stun-pistol hummed. The redhead howled. He'd been hit in the hand. His unshaven companion buckled in the middle and fell to the floor. The third man backed away in panic, automatically raising his arms in surrender.

Hoddan saw no need for further action. He nodded graciously and went out of the control building, swinging the recharged pistol in his hand. In the warehouse, argument

still raged over his possessions. He went in, briskly. Nobody looked at him. The casual appropriation of unguarded property was apparently a social norm, here. The man in the purple cloak was insisting furiously that he was a Darthian gentleman and he'd have his share or else—

"Those things," said Hoddan, "are mine. Put them back."

Faces turned to him, expressing shocked surprise. A man in dirty yellow pants stood up with a suit of Hoddan's underwear and a pair of shoes. He moved with great dignity to depart.

The stun-pistol buzzed. He leaped and howled and fled. Hoddan had aimed accurately enough, but prudence suggested that if he appeared to kill anybody, the matter might become serious. So he'd fired to sting the man with a stun-pistol bolt at about the same spot where, on Walden, he'd scorched members of a party of police in ambush. It was nice shooting. But this happened to be a time and place where prudence did not pay.

There was a concerted gasp of outrage. Men leaped to their feet. Large knives came out of elaborate holsters. Figures in all the colors of the rainbow—all badly soiled—roared their indignation and charged at Hoddan. They waved knives as they came.

He held down the stun-pistol trigger and traversed the rushing men. The whining buzz of the weapon was inaudible, at first, but before he released the trigger it was plainly to be heard. Then there was silence. His attackers formed a very untidy heap on the floor. They breathed stertorously. Hoddan began to retrieve his possessions. He rolled a man over, for the purpose.

A pair of very blue, apprehensive eyes stared at him. Their owner had stumbled over one man and been stumbled over by others. He gazed up at Hoddan, speechless.

"Hand me that, please," said Hoddan. He pointed.

The man in the purple cloak obeyed, shaking. Hoddan completed the recovery of all his belongings. He turned. The man in the purple cloak winced and closed his eyes.

"Hm-m-m," said Hoddan. He needed information. He wasn't likely to get it from the men in the grid's control room. He would hardly be popular with any of these, either. He irritably suspected himself of a tendency to make enemies unnecessarily. But he did need directions. He said: "I have a letter of introduction to one Don Loris, prince of something-or-other, lord of this, baron of that, and claimant to the dukedom of the other thing. Would you have any idea how I could reach him?"

The man in the purple cloak gaped at Hoddan.

"He is . . . my chieftain," he said, aghast. "I . . . am Thal, his most trusted retainer." Then he practically wailed, "You must be the man I was sent to meet! He sent me to learn if you came on the ship! I should have fought by your side! This is disgrace!"

"It's disgraceful," agreed Hoddan grimly. But he, who had been born and raised in a space-pirate community, should not be too critical of others. "Let it go. How do I find him?"

"I should take you!" complained Thal bitterly. "But you have killed all these men. Their friends and chieftains are honor bound to cut your throat! And you shot Merk, but he ran away, and he will be summoning his friends to come and kill you now! This is shame! This is—" Then he said hopefully: "Your strange weapon! How many men can you fight? If fifty, we may live to ride away. If more, we may even reach Don Loris' castle. How many?"

"We'll see what we see," said Hoddan dourly. "But I'd better charge these other pistols. You can come with me, or wait. I haven't killed these men. They're only stunned. They'll come around presently."

He went out of the warehouse, carrying the bag which was again loaded with uncharged stun-pistols. He went back to the grid's control room. He pushed it open and entered for the second time. The red-headed man swore and rubbed at his hand. The man who'd smiled unpleasantly lay in a heap on the floor. The second unshaven man jittered visibly at sight of Hoddan.

"I'm back," said Hoddan politely, "for more kilowatts."

He put his bag conveniently close to the terminals at which his pistols could be recharged. He snapped open a pistol butt and presented it to the electric contacts.

"Quaint customs you have here," he said conversationally. "Robbing a newcomer. Resenting his need for a few watts of power that comes free from the sky." The stun-pistol clicked. He snapped the butt shut and opened another, which he placed in contact for charging. "Making him act," he said acidly, "with manners as bad as the local ones. Going at him with knives so he has to be resentful in his turn." The second stun-pistol clicked. He closed it and began to charge a third. He said severely: "Innocent tourists—relatively innocent ones, anyhow—are not likely to be favorably impressed with Darth!" He had the charging process going swiftly now. He began to charge a fourth weapon. "It's particularly bad manners," he added strenly, "to stand there grinding your teeth at me while your friend behind the desk crawls after an old-fashioned chemical gun to shoot me with."

He snapped the fourth pistol shut and went after the man who'd dropped down behind a desk. He came upon that man, hopelessly panicked, just as his hands closed on a clumsy gun that was supposed to set off a chemical explosive to propel a metal bullet.

"Don't!" said Hoddan severely. "If I have to shoot you at this range, you'll have blisters!"

He took the weapon out of the other man's hands. He went back

and finished charging the rest of the pistols.

He returned most of them to his bag, though he stuck others in his belt and pockets to the point where he looked like the fiction-tape pictures of space pirates. But he knew what space pirates were actually like. He moved to the door. As a last thought, he picked up the bullet-firing weapon.

"There's only one spaceship here a month," he observed politely, "so I'll be around. If you want to get in touch with me, ask Don Loris. I'm going to visit him while I look over professional opportunities on Darth."

He went out once more. Somehow he felt more cheerful than a half-hour since, when he'd landed as the only passenger from the space liner. Then he'd felt ignored and lonely and friendless on a strange and primitive world. He still had no friends, but he had already acquired some enemies and therefore material for more or less worthwhile achievement. He surveyed the sunlit scene about him from the control-room door.

Thal, the purple-cloaked man, had brought two shaggy-haired animals around to the door of the warehouse. Hoddan later learned that they were horses. He was frenziedly in the act of mounting one of them. As he climbed up, small bright metal disks cascaded from a pocket. He tried to stop the flow of money as he got feverishly into the saddle.

From the gable-roofed small town a mob of some thirty mounted men plunged toward the landing grid. They wore garments of yellow and blue and magenta. They waved large-bladed knives and made blood-thirsty noises. Thal saw them and bolted, riding one horse and towing the other by a lead rope. It happened that his line of retreat passed by where Hoddan stood.

Hoddan held up his hand. Thal reined in.

"Mount!" he cried hoarsely. "Mount and ride!"

Hoddan passed up the chemical—powder—gun. Thal seized it frantically.

"Hurry!" he panted. "Don Loris would have my throat cut if I deserted you! Mount and ride!"

Hoddan painstakingly fastened his bag to the saddle of the lead horse. He unfastened the lead rope. He'd noticed that Thal pulled in the leather reins to stop the horse. He'd seen that he kicked it furiously to urge it on. He deduced that one steered the animal by pulling on one strap or the other. He climbed clumsily to a seat.

There was a howl from the racing, mounted men. They waved their knives and yelled in zestful anticipation of murder.

Hoddan pulled on a rein. His horse turned obediently. He kicked it. The animal broke into a run toward the rushing mob. The jolting motion amazed Hoddan. One could not shoot straight while being shaken up like this! He dragged back on the reins. The horse stopped.

"Come!" yelled Thal despairingly. "This way! Quick!"

Hoddan got out a stun-pistol. Sitting erect, frowning a little in his concentration, he began to take pot-shots at the charging small horde.

Three of them got close enough to be blistered when stun-pistol bolts hit them. Others toppled from their saddles at distances ranging from one hundred yards to twenty. A good dozen, however, saw what was happening in time to swerve their mounts and hightail it away. But there were eighteen luridly-tinted heaps of garments on the ground inside the landing grid. Two or three of them squirmed and swore. Hoddan had partly missed, on them. He heard the chemical weapon booming thunderously. Now that victory was won, Thal was shooting valorously. Hoddan held up his hand for cease fire. Thal rode up beside him, not quite believing what he'd seen.

"Wonderful!" he said shakily. "Wonderful! Don Loris will be pleased! He will give me gifts for my help to you! This is a great fight! We will be great men, after this!"

"Then let's go and brag," said Hoddan.

Thal was shocked.

"You need me," he said commiseratingly. "It is fortunate that Don Loris chose me to fight beside you!"

He sent his horse trotting toward the mostly unconscious men on the ground. He alighted. Hoddan saw him happily and publicly pick the pockets of the stun-gun's victims. He came back, beaming and now swaggering in his saddle.

"We will be famous!" he said zestfully. "Two against thirty, and some ran away!" He gloated. "And it was a good haul! We share, of course, because we are companions."

"Is it the custom," asked Hoddan mildly, "to loot defenseless men?"

"But of course!" said Thal. "How else can a gentleman live, if he has no chieftain to give him presents? You defeated them, so of course you take their possessions!"

"Ah, yes," said Hoddan. "To be sure!"

He rode on. The road was a mere horse track. Presently it was less than that. He saw a frowning, battlemented stronghold away off to the left. Thal openly hoped that somebody would come from that castle and try to charge them toll for riding over their lord's land. After Hoddan had knocked them over with the stun-pistol, Thal would add to the heavy weight of coins already in his possession.

It did not look promising, in a way. But just before sunset, Hoddan saw three tiny bright lights flash across the sky from west to east. They moved in formation and at identical speeds. Hoddan knew a spaceship in orbit when he saw one. He bristled, and muttered under his breath.

"What's that?" asked Thal. "What did you say?"

"I said," said Hoddan dourly, "that I've got to do something about

Walden. When they get an idea in their heads . . ."

IV

According to the fiction tapes, the colonized worlds of the galaxy vary wildly from each other. In cold and unromantic fact, it isn't so. Space travel is too cheap and sol-type solar systems too numerous to justify the settlement of hostile worlds. There's no point in trying to live where one has to put on special equipment every time he goes outdoors. There's no reason to settle on a world where one can't grow the kind of vegetation one's ancestors adapted themselves to some tens of thousands of generations ago. It simply doesn't make sense!

So the inhabited worlds of the galaxy are farther apart than they could be, perhaps, and much more alike than is necessary. But the human race has a predilection for gravity fields not too far from 980cm-sec accellerative force. We humans were designed for something like that. We prefer foodstuffs containing familiar amino compounds. Our metabolism was designed around them. And since our geneticists have learned how to put aggressiveness into the genes of terrestrial-origin plants—why nowadays they briskly overwhelm the native flora wherever they are introduced. And it's rational to let it happen. If people are to thrive and multiply on new worlds as they are colonized, it's more convenient to modify the worlds to fit the colonists than the colonists to fit the worlds.

Therefore Bron Hoddan encountered no remarkable features in the landscape of Darth as he rode through the deepening night. There was grass, which was not luxuriant. There were bushes, which were not unduly lush. There were trees, and birds, and various other commonplace living things whose forebears had been dumped on Darth some centuries before. The ecological system had worked itself out strictly by hit-or-miss, but the result was not unfamiliar. Save for the star-pattern overhead, Hoddan could have believed himself on some parts of Zan, or some parts of Walden, or very probably somewhere or other on Lohala or Kent or Famagusta or any other occupied world between the Rims.

There was, though, the star-pattern. Hoddan tried to organize it in his mind. He knew where the sun had set, which would be west. He asked the latitude of the Darthian spaceport. Thal did not know it. He asked about major geographical features—seas and continents and so on. Thal had no ideas on the subject.

Hoddan fumed. He hadn't worried about such things on Walden. Of course, on Walden he'd had one friend, Derec, and believed he had a sweetheart, Nedda. There he was lonely and schemed to acquire the admiration of others. He ignored the sky. Here on Darth he had no friends, but there were a number of local citizens now doubtless recov-

ged from stun-pistol bolts and yearning to carve him up with large knives. He did not feel lonely, but the instinct to know where he was, was again in operation.

The ground was rocky and far from level. After two hours of riding on a small and wiry horse with no built-in springs, Hoddan hurt in a great many places he'd never known he owned. He and Thal rode in an indeterminate direction with an irregular scarp of low mountains silhouetted against the unfamiliar stars. A vagrant night-wind blew. Thal had said it was a three-hour ride to Don Loris' castle. After something over two of them, he said meditatively:

"I think that if you wish to give me a present I will take it and not make a gift in return. You could give me," he added helpfully, "your share of the plunder from our victims."

"Why?" demanded Hoddan. "Why should I give you a present?"

"If I accepted it," explained Thal, "and made no gift in return, I would become your retainer. Then it would be my obligation as a Darthian gentleman to ride beside you, advise, counsel, and fight in your defense, and generally to uphold your dignity."

Hoddan suspected himself of blisters in places that had no dignity about them. He said suspiciously:

"How about Don Loris? Aren't you his retainer?"

"Between the two of us," said Thal, "he's stingy. His presents are not as lavish as they could be. I can make him a return-present of part of the money we won in combat. That frees me of duty to him. Then I could accept the balance of the money from you, and become a retainer of yours."

"Oh," said Hoddan.

"You need a retainer badly," said Thal. "You do not know the customs here. For example, there is enmity between Don Loris and the young Lord Ghek. If the young Lord Ghek is as enterprising as he should be, some of his retainers should be lying in wait to cut our throats as we approach Don Loris' stronghold."

"Hm-m-m," said Hoddan grimly. But Thal seemed undisturbed. "This system of gifts and presents sounds complicated. Why doesn't Don Loris simply give you so much a year, or week, or whatnot?"

Thal made a shocked sound.

"That would be pay! A Darthian gentleman does not serve for pay! To offer it would be insult!" Then he said, "Listen!"

He reined in. Hoddan clumsily followed his example. After a moment or two Thal clucked to his horse and started off again.

"It was nothing," he said regretfully. "I hoped we were riding into an ambush."

Hoddan grunted. It could be that he was being told a tall tale. But back at the spaceport, the men who came after him waving large knives had seemed sincere enough.

"Why should we be ambushed?"

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he asked. "And why do you hope for it?"

"Your weapons would destroy our enemies," said Thal placidly, "and the pickings would be good." He added: "We should be ambushed because the Lady Fani refused to marry the Lord Ghek. She is Don Loris' daughter, and to refuse to marry a man is naturally a deadly insult. So he should ravage Don Loris' lands at every opportunity until he gets a chance to carry off the Lady Fani and marry her by force. That is the only way the insult can be wiped out."

"I see," said Hoddan ironically.

He didn't. The two horses topped a rise, and far in the distance there was a yellow light, with a mist above it as of illuminated smoke.

"That is Don Loris' stronghold," said Thal. He sighed. "It looks like we may not be ambushed."

They weren't. It was very dark where the horses forged ahead through brushwood. As they moved onward, the single light became two. They were great bonfires burning in iron cages some forty feet up in the air. Those cages projected from the battlements of a massive, cut-stone wall. There was no light anywhere else underneath the stars.

Thal rode almost underneath the cressets and shouted upward. A voice answered. Presently a gate clanked open and a black, cavelike opening appeared behind it. Thal rode grandly in, and Hoddan followed. Now that the ride seemed over, he let himself realize where he ached from the unaccustomed exercise. Everywhere. He also guessed at the area of his skin first rubbed to blisters and then to the discomfort of raw flesh underneath.

The gate clanked shut. Torches waved overhead. Hoddan found that he and Thal had ridden into a very tiny courtyard. Twenty feet above them, an inner battlemented wall offered excellent opportunities for the inhabitants of the castle to throw things down at visitors who after admission turned out to be undesired.

Thal shouted further identifications, including a boastful and entirely untruthful declaration that he and Hoddan, together, had slaughtered twenty men in one place and thirty in another, and left them lying in their gore.

The voices that replied sounded derisive. Somebody came down a rope and fastened the gate from the inside. With an extreme amount of creaking, an inner gate swung wide. Men came out of it and took the horses. Hoddan dismounted, and it seemed to him that he creaked as loudly as the gate. Thal swaggered, displaying coins he had picked from the pockets of the men the stun-pistols had disabled. He said splendidly to Hoddan:

"I go to announce your coming to Don Loris. These are his retainers. They will give you to drink." He added amiably, "If you were given food, it would be disgraceful to cut your throat."

He disappeared. Hoddan carried his ship bag and followed a man in

a dirty pink shirt to a stone-walled room containing a table and a chair. He sat down, relieved to have a rest for his back. The man in the pink shirt brought him a flagon of wine. He disappeared again.

Hoddan drank sour wine and brooded. He was very hungry and very tired, and it seemed to him that he had been disillusioned in a new dimension. Morbidly, he remembered a frequently given lecture from his grandfather on Zan.

"It's no use!" it was the custom of his grandfather to say. "There's not a bit o' use in having brains! All they do is get you into trouble! A lucky idiot's ten times better off than a brainy man with a jinx on him! A smart man starts thinkin', and he thinks himself into a jail cell if his luck is bad, and good luck's wasted on him because it ain't reasonable and he don't believe in it when it happens! It's taken me a lifetime to keep my brains from ruinin' me! No, sir! I hope none o' my descendants inherit my brains! I pity 'em if they do!"

Hoddan had been on Darth not more than four hours. In that time he'd found himself robbed, had resented it, had been the object of two spirited attempts at assassination, had ridden an excruciating number of miles on an unfamiliar animal, and now found himself in a stone dungeon and deprived of food lest feeding him obligate his host not to cut his throat. And he'd gotten into this by himself! He'd chosen it! He'd practically asked for it!

He began strongly to share his grandfather's disillusioned view of brains.

After a long time the door of the cell opened. Thal was back, chastened.

"Don Loris wants to talk to you," he said in a subdued voice. "He's not pleased."

Hoddan took another gulp of the wine. He picked up his ship bag and limped to the door. He decided painfully that he was limping on the wrong leg. He tried the other. No improvement. He really needed to limp on both.

He followed a singularly silent Thal through a long stone corridor and up stone steps until they came to a monstrous hall with torches in holders on the side walls. It was barbarically hung with banners, but it was not exactly a cheery place. At the far end logs burned in a great fireplace.

Don Loris sat in a carved chair beside it; wizened and white-bearded, in a fur-trimmed velvet robe, with a peevish expression on his face.

"My chieftain," said Thal subduedly, "here is the engineer from Walden."

Hoddan scowled at Don Loris, whose expression of peevishness did not lighten. He did regard Hoddan with a flicker of interest, however. A stranger who unfeignedly scowls at a feudal lord with no superior and many inferiors is anyhow a novelty.

"Thal tells me," said Don Loris fretfully, "that you and he, together,

slaughtered some dozens of the retainers of my neighbors today. I consider it unfortunate. They may ask me to have the two of you hanged, and it would be impolite to refuse."

Hoddan said truculently:

"I considered it impolite for your neighbors' retainers to march toward me waving large knives and announcing what they intended to do to my inwards with them!"

"Yes," agreed Don Loris impatiently. "I concede that point. It is natural enough to act hastily at such times. But still— How many did you kill?"

"None," said Hoddan curtly. "I shot them with stun-pistols I'd just charged in the control room of the landing grid."

Don Loris sat up straight.

"Stun-pistols?" he demanded sharply. "You used stun-pistols on Darth?"

"Naturally on Darth," said Hoddan with some tartness. "I was here! But nobody was killed. One or two may be slightly blistered. All of them had their pockets picked by Thal. I understand that is a local custom. There's nothing to worry about."

But Don Loris stared at him, aghast.

"But this is deplorable!" he protested. "Stun-pistols used here? It is the one thing I would have given strict orders to avoid! My neighbors will talk about it. Some of them may even think about it! You could have used any other weapon, but of all things why did you have to use a stun-pistol?"

"Because I had one," said Hoddan briefly.

"Horrible!" said Don Loris peevishly. "The worst thing you could possibly have done! I have to disown you. Unmistakably! You'll have to disappear at once. We'll blame it on Ghek's retainers."

Hoddan said:

"Disappear? Me?"

"Vanish," said Don Loris. "I suppose there's no real necessity to cut your throat, but you plainly have to disappear, though it would have been much more discreet if you'd simply gotten killed."

"I was indiscreet to survive?" demanded Hoddan bristling.

"Extremely so!" snapped Don Loris. "Here I had you come all the way from Walden to help arrange a delicate matter, and before you'd traveled even the few miles to my castle—within minutes of landing on Darth!—you spoiled everything! I am a reasonable man, but there are the facts! You used stun-pistols, so you have to disappear. I think it generous for me to say only until people on Darth forget that such things exist. But the two of you . . . oh, for a year or so . . . there are some fairly cozy dungeons—"

Hoddan seethed suddenly. He'd tried to do something brilliant on Walden, and had been framed for jail for life. He'd defended his life and property on Darth, and nearly the same thing popped up as a prospect. Hoddan angrily suspected fate

and chance of plain conspiracy against him.

But there was an interruption. A clanking of arms sounded somewhere nearby. Men with long, gruesome, glittering spears came through a doorway. They stood aside. A girl entered the great hall. More spearmen followed her. They stopped by the door. The girl came across the hall.

She was a pretty girl, but Hoddan hardly noticed the fact. With so many other things on his mind, he had no time for girls.

Thal, behind him, said in a quivering voice:

"My Lady Fani, I beg you to plead with your father for his most faithful retainer!"

The girl looked surprisedly at him. Her eyes fell on Hoddan. She looked interested. Hoddan, at that moment, was very nearly as disgusted and as indignant as a man could be. He did not look romantically at her—which to the Lady Fani, daughter of that Don Loris who was prince of this and baron of that and so on, was news. He did not look at her at all. He ground his teeth.

"Don't try to wheedle me, Fani!" snapped Don Loris. "I am a reasonable man, but I indulge you too much—even to allowing you to refuse that young imbecile Ghek, with no end of inconvenience as a result. But I will not have you question my decision about Thal and this Hoddan person!"

The girl said pleasantly:

"Of course not, Father. But what have they done?"

"The two of them," snapped Don Loris again, "fought twenty men today and defeated all of them! Thal plundered them. Then thirty other men, mounted, tried to avenge the first and they defeated them also! Thal plundered eighteen. And all this was permissible, if unlikely. But they did it with stun-pistols! Everybody within news range will talk of it! They'll know that this Hoddan came to Darth to see me! They'll suspect that I imported new weapons for political purposes! They'll guess at the prettiest scheme I've had these twenty years!"

The girl stood still. A spearman leaned his weapon against the wall, raced across the hall, shifted a chair to a convenient position for the Lady Fani to sit on it, and raced back to his fellows. She sat down.

"But did they really defeat so many?" she asked, marveling. "That's wonderful! And Thal was undoubtedly fighting in defense of someone you'd told him to protect, as a loyal retainer should do. Wasn't he?"

"I wish," fumed her father, "that you would not throw in irrelevancies! I sent him to bring this Hoddan here this afternoon, not to massacre my neighbors' retainers—or rather, not to not massacre them. A little bloodletting would have done no harm, but stun-pistols—"

"He was protecting somebody he was told to protect," said Fani. "And this other man, this—"

"Hoddan. Bron Hoddan," said her father irritably. "Yes. He was protecting himself! Doubtless he thought he did me a service in doing that! But if he'd only let himself get killed quietly the whole affair would be simplified!"

The Lady Fani said with quiet dignity:

"By the same reasoning, Father, it would simplify things greatly if I let the Lord Ghek kidnap me."

"It's not the same thing at all—"

"At least," said Fani, "I wouldn't have a pack of spearmen following me about like puppies everywhere I go!"

"It's not the same—"

"Their breaths smelling of wine except when they smell of beer, and they breathe very noisily and—"

"It's not—"

"And it's especially unreasonable," said the Lady Fani with even greater dignity, "when you could put Thal and this—Hoddan person on duty to guard me instead. If they can fight twenty and thirty men at once, all by themselves, it doesn't seem to me that you think much of my safety when you want to lock them up somewhere instead of using them to keep your daughter safe from that particularly horrible Ghek!"

Don Loris swore in a cracked voice. Then he said:

"To end the argument I'll think it over. Until tomorrow. Now go away!"

Fani, beaming, rose and kissed him on the forehead. He squirmed. She turned to leave, and beckoned casually for Thal and Hoddan to follow her.

"My chieftain," said Thal tremulously, "do we depart, too?"

"Yes!" rasped Don Loris. "Get out of my sight!"

Thal moved with agility in the wake of the Lady Fani. Hoddan picked up his bag and followed. This, he considered darkly, was in the nature of a reprieve only. And if those three spaceships overhead did come from Walden—but why three?

The Lady Fani went out the door she'd entered by. Some of the spearmen went ahead, and others closed in behind her. Hoddan followed. There were stone steps leading upward. They were steep and uneven and interminable. Hoddan climbed on aching legs for what seemed ages.

Stars appeared. The leading spearmen stepped out on a flagstoned level area. When Hoddan got there he saw that they had arrived at the battlements of a high part of the castle wall. Starlight showed a rambling wall of circumvallation, with peaked roofs inside it. He could look down into a courtyard where a fire burned and several men busily did things beside it. But there were no other lights. Beyond the castle wall the ground stretched away toward a nearby range of rugged low mountains. It was vaguely splotched with different degrees of darkness, where fields and pastures and woodland copses stood.

"Here's a bench," said Fani cheerfully, "and you can sit down beside me and explain things. What's your name, again, and where did you come from?"

"I'm Bron Hoddan," said Hoddan. He found himself scowling. "I come from Zan, where everybody is a space pirate. My grandfather heads the most notorious of the pirate gangs."

"Wonderful!" said Fani, admiringly. "I knew you couldn't be just an ordinary person and fight like my father said you did today!"

Thal cleared his throat.

"Lady Fani—"

"Hush!" said Fani. "You're a nice old fuddy-duddy that father sent to the spaceport because he figured you'd be too timid to get into trouble. Hush!" To Hoddan she said interestedly, "Now, tell me all about the fighting. It must have been terrible!"

She watched him with her head on one side, expectantly.

"The fighting I did today," said Hoddan angrily, "was exactly as dangerous and as difficult as shooting fish in a bucket. A little more trouble, but not much."

Even in the starlight he could see that her expression was more admiring than before.

"I thought you'd say something like that!" she said contentedly. "Go on!"

"That's all," said Hoddan.

"Quite all?"

"I can't think of anything else," he told her. He added drearily: "I rode a horse for three hours today. I'm not used to it. I ache. Your father is thinking of putting me in a dungeon until some scheme or other of his goes through. I'm disappointed. I'm worried about three lights that went across the sky at sundown and I'm simply too tired and befuddled for normal conversation."

"Oh," said Fani.

"If I may take my leave," said Hoddan querulously, "I'll get some rest and do some thinking when I get up. I'll hope to have more entertaining things to say."

He got to his feet and picked up his bag.

"Where do I go?" he asked.

Fani regarded him enigmatically. Thal squirmed.

"Thal will show you." Then Fani said deliberately, "Bron Hoddan, will you fight for me?"

Thal plucked anxiously at his arm. Hoddan said politely:

"If at all desirable, yes. But now I must get some sleep."

"Thank you," said Fani. "I am troubled by the Lord Ghek."

She watched him move away. Thal, moaning softly, went with him down another monstrosity of a stone stairway.

"Oh, what folly!" mourned Thal. "I tried to warn you! You would not pay attention! When the Lady Fani asked if you would fight for her, you should have said if her father permitted you that honor. But you said yes! The spearmen heard you! Now you must either fight the Lord

Ghek within a night and day or be disgraced!"

"I doubt," said Hoddan tiredly, "that the obligations of Darthian gentility apply to the grandson of a pirate or an escap . . . To me."

He'd been about to say an escaped criminal from Walden, but caught himself in time.

"But they do apply!" said Thal, shocked. "A man who has been disgraced has no rights! Any man may plunder him, any man may kill him at will. But if he resists plundering or kills anybody else in self-defense, he is hanged!"

Hoddan stopped short in his descent of the uneven stone steps.

"That's me from now on?" he said sardonically. "Of course the Lady Fani didn't mean to put me on such a spot!"

"You were not polite," explained Thal. "She'd persuaded her father out of putting us in a dungeon until he thought of us again. You should at least have shown good manners! You should have said that you came here across deserts and flaming oceans because of the fame of her beauty. You might have said you heard songs of her sweetness beside campfires half a world away. She might not have believed you, but—"

"Hold it!" said Hoddan. "That's just manners? What would you say to a girl you really liked?"

"Oh, then," said Thal, "you'd get complimentary!"

Hoddan went heavily down the rest of the steps. He was not in the least pleased. On a strange world, with strange customs, and with his weapons losing their charge every hour, he did not need any handicaps. But if he got into a worse-than-outlawed category such as Thal described—

At the bottom of the stairs he said, seething:

"When you've tucked me in bed, go back and ask the Lady Fani to arrange for me to have a horse and permission to go fight this Lord Ghek right after breakfast!"

He was too much enraged to think further. He let himself be led into some sort of quarters which probably answered Don Loris' description of a cozy dungeon. Thal vanished and came back with ointments for Hoddan's blisters, but no food. He explained again that food given to Hoddan would make it disgraceful to cut his throat. And Hoddan swore poisonously, but stripped off his garments and smeared himself lavishly where he had lost skin. The ointment stung like fire, and he presently lay awake in a sort of dreary fury. And he was ravenous!

It seemed to him that he lay awake for aeons, but he must have dozed off because he was awakened by a yell. It was not a complete yell; only the first part of one. It stopped in a particularly unpleasant fashion, and its echoes went reverberating through the stony walls of the castle. Hoddan was out of bed with a stun-pistol in his hand in a hurry, before that first yell was followed by other shouts and outcries, by the clashing of steel upon

steel, and all the frenzied tumult of combat in the dark. The uproar moved. In seconds the sound of fighting came from a plainly different direction, as if a striking force of some sort went rushing through only indifferently defended corridors.

It would not pass before Hoddan's door, but he growled to himself. On a feudal world, presumably one might expect anything. But there was a situation in being, here, in which etiquette required a rejected suitor to carry off a certain scornful maiden by force. Some young lordling named Ghek had to carry off Fani or be considered a man of no spirit.

A gun went off somewhere. It was a powder gun, exploding violently to send a metal bullet somewhere. It went off again. There was an instant almost of silence. Then an intolerable screeching of triumph, and shrieks of another sort entirely, and the excessively loud clash of arms once more.

Hoddan was clothed, now—at least clothed enough to have places to stick stun-pistols. He jerked on the door to open it, irritably demanding of himself how he would know which side was which, or for that matter which side he should fight on.

The door was locked. He raged. He flung himself against it and it barely quivered. It was barred on the outside. He swore in highly indecorous terms, and tore his bedstead apart to get a battering-ram.

The fighting reached a climax. He heard a girl scream, and without question knew that it was the Lady Fani, and equally without question knew that he would fight to keep any girl from being abducted by a man she didn't want to marry. He swung the log which was the corner post of his bed. Something cracked. He swung again.

The sound of battle changed to that of a running fight. The objective of the raiders had been reached. Having gotten what they came for —and it could only be Fani—they retreated swiftly, fighting only to cover their retreat. Hoddan swung his bed leg with furious anger. He heard a flurry of yells and sword strokes, and a fierce, desperate cry from Fani among them, and a plank in his guest-room-dungeon door gave way. He struck again. The running raiders poured past a corner some yards away. He battered and swore, swore and battered as the tumult moved, and he suddenly heard a scurrying thunder of horses' hoofs outside the castle altogether. There were yells of derisive triumph and the pounding, rumbling sound of horses headed away in the night until it was lost.

Still raging inarticulately, Hoddan crashed his small log at the door. He was not consciously concerned about the distress Don Loris might feel over the abduction of his daughter. But there is an instinct in most men against the forcing of a girl to marriage against her will. Hoddan battered at his door. Around him the castle began to hum like a hive of bees. Women cried out or exclaimed, and men shouted furiously to one

another, and off-duty fighting men came belatedly looking for somebody to fight, dragging weapons behind them and not knowing where to find enemies.

Bron Hoddan probably made as much noise as any four of them. Somebody brought a light somewhere near. It shone through the cracks in the splintered planks. He could see to aim. He smote savagely and the door came apart. It fell outward and he found himself in the corridor outside, being stared at by complete strangers.

"It's the engineer," someone explained to someone else. "I saw him when he rode in with Thal."

"I want Thal," said Hoddan coldly. "I want a dozen horses. I want men to ride them with me." He pushed his way forward. "Which way to the stables?"

But then he went back and picked up his bag of stun-pistols. His air was purposeful and his manner furious. The retainers of Don Loris were in an extremely apologetic frame of mind. The Lady Fani had been carried off into the night by a raiding party undoubtedly led by Lord Ghek. The defenders of the castle hadn't prevented it. So there was no special reason to obey Hoddan, but there was every reason to seem to be doing something useful.

He found himself almost swept along by agitated retainers trying to look as if they were about a purposeful affair. They went down a long ramp, calling uneasily to each other. They eddied around a place where two men lay quite still on the floor. Then there were shouts of, "Thal! This way, Thal!" and Hoddan found himself in a small stone-walled courtyard doubtless inside a sally-port. It was filled with milling figures and many waving torches. And there was Thal, desperately pale and frightened. Behind him there was Don Loris, his eyes burning and his hands twitching, literally speechless from fury.

"Pick a dozen men, Thal!" commanded Hoddan. "Get 'em on horses! Get a horse for me, dammit! I'll show 'em how to use the stun-pistols as we ride!"

Thal panted, shaking:

"They . . . hamstrung most of the horses!"

"Get the ones that are left!" barked Hoddan. He suddenly raged at Don Loris. "Here's another time stun-pistols get used on Darth! Object to this if you want to!"

Hoofbeats. Thal on a horse that shied and reared at the flames and confusion. Other horses, skittish and scared, with the smell of spilt blood in their nostrils, fighting the men who led them, their eyes rolling.

Thal called names as he looked about him. There was plenty of light. As he called a name, a man climbed on a horse. Men thrust swords, spears—all manner of weapons upon them. Some of the chosen men swaggered because of their choice. Some looked woefully unhappy. But with Don Loris glaring frenziedly upon

them in the smoky glare, no man refused.

Hoddan climbed ungracefully upon the mount that four or five men held for him. Thal, with a fine sense of drama, seized a torch and waved it above his head. There was a vast creaking, and an unsuspected gate opened, and Thal rode out with a great clattering of hoofs and the others rode out after him.

There were lights everywhere about the castle, now. All along the battlements men had set light to fire-baskets and lowered them partway down the walls, to disclose any attacking force which might have dishonorable intentions toward the stronghold. Others waved torches from the battlements.

Thal swung his torch and pointed to the ground.

"They rode here!" he called to Hoddan. "They ride for Ghek's castle!"

Hoddan said angrily:

"Put out that light! Do you want to advertise how few we are and what we're doing? Here, ride close!"

Thal flung down the torch and horses trod it underfoot as the knot of men rode on. That boomed:

"The pickings should be good, eh? Why do you want me?"

"You've got to learn something," snapped Hoddan. "Here! This is a stun-pistol. It's set for single-shot firing only. You hold it so, with your finger along this rod. You point your finger at a man and pull this trigger. The pistol will buzz—briefly. You let the trigger loose and point at another man and pull the trigger again. Understand? Don't try to use it over ten yards. You're no marksman!"

There on a galloping horse beside Hoddan in the darkness, Thal zestfully repeated his lesson.

"Show another man and send him to me for a pistol," Hoddan commanded curtly. "I'll be showing others."

He turned to the man who rode too close to his left. Before he had fully instructed that man, another clamored for a weapon on his right.

This was hardly adequate training in the use of modern weapons. For that matter, Hoddan was hardly qualified to give military instruction. He'd only gone on two pirate voyages himself. But little boys on Zan played at pirate, in dutiful emulation of their parents. At least the possibilities of stun-guns were envisioned in their childish games. So Hoddan knew more about how to fight with stun-pistols than somebody who knew nothing at all.

The band of pursuing horsemen pounded through the dark night under strangely patterened stars. Hoddan held on to his saddle and barked out instructions to teach Darthians how to shoot. He felt very queer. He began to worry. With the lights of Don Loris' castle long vanished behind, he began to realize how very small his troop was.

Thal had said something about horses being hamstrung. There must, then, have been two attacking parties. One swarmed into the stables to

draw all defending retainers there. Then the other poured over a wall or in through a bribed-open sally-port, and rushed for the Lady Fani's apartments. The point was that the attackers had made sure there could be only a token pursuit. They knew they were many times stronger than any who might come after them. It would be absurd for them to flee . . .

Hoddan kicked his horse and got up to the front of the column of riders in the night.

"Thal!" he snapped. "They'll be idiots if they keep on running away, now they're too far off to worry about men on foot. They'll stop and wait for us—most of them anyhow. We're riding into an ambush!"

"Good pickings," eh? said Thal.

"Idiot!" yelped Hoddan. "These men know you. You know what I can do with stun-pistols! Tell them we're riding into ambush. They're to follow close behind us two! Tell them they're not to shoot at anybody more than five yards off and not coming at them, and if any man stops to plunder I'll kill him personally!"

Thal gaped at him.

"Not stop to plunder?"

"Ghek won't!" snapped Hoddan. "He'll take Fani on to his castle, leaving most of his men behind to massacre us!"

Thal reined aside and Hoddan pounded on at the head of the tiny troop. This was the second time in his life he'd been on a horse. It was two too many. This adventure was not exhilarating. It came into his mind, depressingly, that supposedly stirring action like this was really no more satisfying than piracy. Fani. had tricked him into a fix in which he had to fight Ghek or be disgraced —and to be disgraced on Darth was equivalent to suicide.

His horse came to a gentle rise in the ground. It grew steeper. The horse slacked in its galloping. The incline grew steeper still. The horse slowed to a walk, which it pursued with a rhythmically tossing head. It was only less uncomfortable than a gallop. The dim outline of trees appeared overhead.

"Perfect place for an ambush," Hoddan reflected dourly.

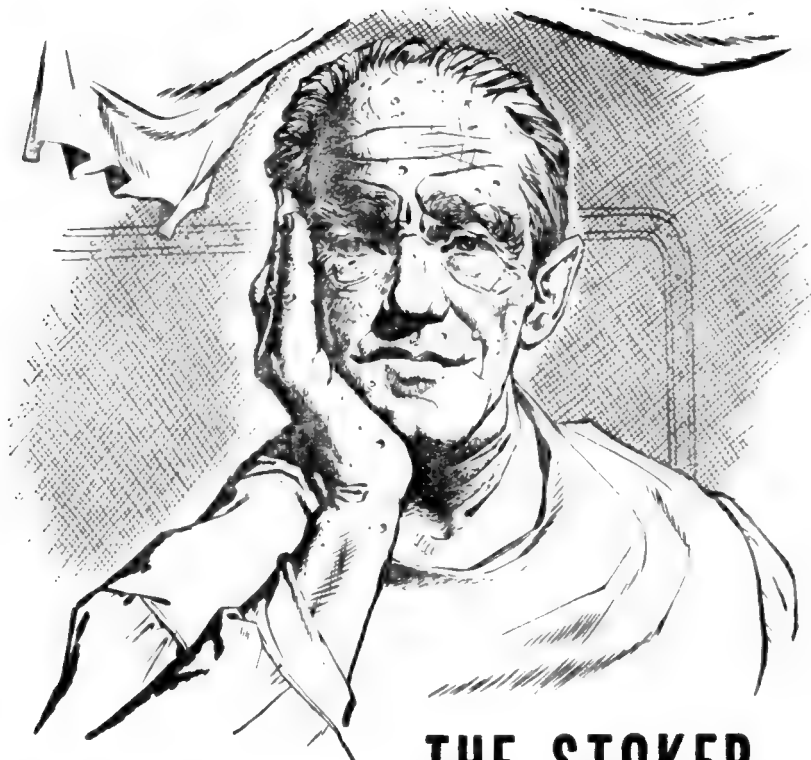
He got out a stun-pistol. He set the stud for continuous fire—something he hadn't dared trust to the others.

His horse breasted the rise. There was a yell ahead and dim figures plunged toward him.

He painstakingly made ready to swing his stun-pistol from his extreme right, across the space before him, and all the way to the extreme left. The pistol should be capable of continuous fire for four seconds. But it was operating on stored charge. He didn't dare count on more than three.

He pulled the trigger. The stun-pistol hummed, though its noise was inaudible through the yells of the charging partisans of the Lord Ghek.

TO BE CONTINUED



THE STOKER AND THE STARS

BY JOHN A. SENTRY

When you've had your ears pinned back in a bowknot, it's sometimes hard to remember that an intelligent people has no respect for a whipped enemy . . . but does for a fairly beaten enemy.

Illustrated by van Dongen

NOW him? Yes, I know him—*knew* him. That was twenty years ago.

Everybody knows him now. Everybody who passed him on the street knows him. Everybody who went to the same schools, or even to different schools in different towns, knows him now. Ask them. But I knew him. I lived three feet away from him for a month and a half. I shipped with him and called him by his first name.

What was he like? What was he thinking, sitting on the edge of his bunk with his jaw in his palm and his eyes on the stars? What did he think he was after?

Well . . . Well, I think he— You know, I think I never did know him, after all. Not well. Not as well as some of those people who're writing the books about him seem to.

I couldn't really describe him to you. He had a duffelbag in his hand and a packed airsuit on his back. The skin of his face had been dried out by ship's air, burned by ultraviolet and broiled by infra red. The pupils of his eyes had little cloudy specks in them where the cosmic rays had shot through them. But his eyes were steady and his body was hard. What did he look like? He looked like a man.

It was after the war, and we were beaten. There used to be a school of thought among us that deplored our combativeness; before we had ever met any people from off Earth, even, you could hear people saying we were toughest, cruelest life-form in the Universe, unfit to mingle with the gentler wiser races in the stars, and a sure bet to steal their galaxy and corrupt it forever. Where these people got their information, I don't know.

We were beaten. We moved out beyond Centaurus, and Sirius, and then we met the Jeks, the Nosurwey, the Lud. We tried Terrestrial know-how, we tried Production Miracles, we tried patriotism, we tried damning the torpedoes and full speed ahead . . . and we were smashed back like mayflies in the wind. We died in droves, and we retreated from the guttering fires of a dozen planets, we dug in, we fought through the last ditch, and we were dying on Earth itself before Baker mutinied, shot Cope, and surrendered the remainder of the human race to the wiser, gentler races in the stars. That way, we lived. That way, we were permitted to carry on our little concerns, and mind our manners. The Jeks and the Lud and the Nosurwey returned to their own affairs, and we knew they would leave us alone so long as we didn't bother them.

We liked it that way. Understand me—we didn't accept it, we didn't knuckle under with waiting murder in our hearts—we *liked* it. We were grateful just to be left alone again. We were happy we hadn't been wiped out like the upstarts the rest of the Universe thought us to be. When they let us keep our own solar system and carry on a trickle of trade with the outside, we accepted it for

the fantastically generous gift it was. Too many of our best men were dead for us to have any remaining claim on these things in our own right. I know how it was. I was there, twenty years ago. I was a little, pudgy man with short breath and a high-pitched voice. I was a typical Earthman.

We were out on a God-forsaken landing field on Mars, MacReidie and I, loading cargo aboard the *Serenus*. MacReidei was First Officer. I was Second. The stranger came walking up to us.

"Got a job?" he asked, looking at MacReidie.

Mac looked him over. He saw the same things I'd seen. He shook his head. "Not for you. The only thing we're short on is stokers."

You wouldn't know. There's no such thing as a stoker any more, with automatic ships. But the stranger knew what Mac meant.

Serenus had what they called an electronic drive. She had to run with an evacuated engine room. The leaking electricity would have broken any stray air down to ozone, which eats metal and rots lungs. So the engine room had the air pumped out of her, and the stokers who tended the dials and set the cathode attitudes had to wear suits, smelling themselves for twelve hours at a time and standing a good chance of cooking where they sat when the drive arced. *Serenus* was an ugly old tub. At that, we were the better of the two interstellar freighters the human race had left.

"You're bound over the border, aren't you?"

MacReidie nodded. "That's right. But—"

"I'll stoke."

MacReidie looked over toward me and frowned. I shrugged my shoulders helplessly. I was a little afraid of the stranger, too.

The trouble was the look of him. It was the look you saw in the bars back on Earth, where the veterans of the war sat and stared down into their glasses, waiting for night to fall so they could go out into the alleys and have drunken fights among themselves. But he had brought that look to Mars, to the landing field, and out here there was something disquieting about it.

He'd caught Mac's look and turned his head to me. "I'll stoke," he repeated.

I didn't know what to say. MacReidie and I—almost all of the men in the Merchant Marine—hadn't served in the combat arms. We had freighted supplies, and we had seen ships dying on the runs—we'd had our own brushes with commerce raiders, and we'd known enough men who joined the combat forces. But very few of the men came back, and the war this man had fought hadn't been the same as ours. He'd commanded a fighting ship, somewhere, and come to grips with things we simply didn't know about. The mark was on him, but not on us. I couldn't meet his eyes. "O.K. by me," I mumbled at last.

I saw MacReidie's mouth turn

down at the corners. But he couldn't gainsay the man any more than I could. MacReidie wasn't a mumbling man, so he said angrily: "O.K., bu:ko, you'll stoke. Go and sign on."

"Thanks." The stranger walked quietly away. He wrapped a hand around the cable on a cargo hook and rode into the hold on top of some freight. Mac spat on the ground and went back to supervising his end of the loading. I was busy with mine, and it wasn't until we'd gotten the *Serenus* loaded and buttoned up that Mac and I even spoke to each other again. Then we talked about the trip. We didn't talk about the stranger.

Daniels, the Third, had signed him on and had moved him into the empty bunk above mine. We slept all in a bunch on the *Serenus*—officers and crew. Even so, we had to sleep in shifts, with the ship's designers giving ninety per cent of her space to cargo, and eight per cent to power and control. That left very little for the people, who were crammed in any way they could be. I said empty bunk. What I meant was, empty durand I'd be sharing work shifts—me ing my sleep shift. That meant he up in the control blister, parked in a soft chair, and him down in the engine room, broiling in a suit for twelve hours.

But I ate with him, used the head with him; you can call that rubbing elbows with greatness, if you want to.

He was a very quiet man. Quiet in the way he moved and talked. When we were both climbing into our bunks, that first night, I introduced myself and he introduced himself. Then he heaved himself into his bunk, rolled over on his side, fixed his straps, and fell asleep. He was always friendly toward me, but he must have been very tired that first night. I often wondered what kind of a life he'd lived after the war—what he'd done that made him different from the men who simply grew older in the bars. I wonder, now, if he really did do anything different. In an odd way, I like to think that one day, in a bar, on a day that seemed like all the rest to him when it began, he suddenly looked up with some new thought, put down his glass, and walked straight to the Earth-Mars shuttle field.

He might have come from any town on Earth. Don't believe the historians too much. Don't pay too much attention to the Chamber of Commerce plaques. When a man's name becomes public property, strange things happen to the facts.

It was MacReidie who first found out what he'd done during the war.

I've got to explain about MacReidie. He takes his opinions fast and strong. He's a good man—is, or was; I haven't seen him for a long while—but he liked things simple.

MacReidie said the duffelbag broke loose and floated into the middle of the bunkroom during acceleration. He opened it to see whose it was. When he found out, he closed it up and strapped it back in its place at the foot of the stoker's bunk.

MacReidie was my relief on the bridge. When he came up, he didn't relieve me right away. He stood next to my chair and looked out through the ports.

"Captain leave any special instructions in the Order Book?" he asked.

"Just the usual. Keep a tight watch and proceed cautiously."

"That new stoker," Mac said.

"Yeah?"

"I knew there was something wrong with him. He's got an old Marine uniform in his duffel."

I didn't say anything. Mac glanced over at me. "Well?"

"I don't know." I didn't.

I couldn't say I was surprised. It had to be something like that, about the stoker. The mark was on him, as I've said.

It was the Marines that did Earth's best dying. It had to be. They were trained to be the best we had, and they believed in their training. They were the ones who slashed back the deepest when the other side hit us. They were the ones who sallied out into the doomed spaces between the stars and took the war to the other side as well as any human force could ever hope to. They were always the last to leave an abandoned position. If Earth had been giving medals to members of her forces in the war, every man in the Corps would have had the Medal of Honor two and three times over. Posthumously. I don't believe there were ten of them left alive when Cope was shot. Cope was one of them. They were a kind of human being neither MacReidie nor I could hope to understand.

"You don't know," Mac said. "It's there. In his duffel. Damn it, we're going out to trade with his sworn enemies! Why do you suppose he wanted to sign on? Why do you suppose he's so eager to go!"

"You think he's going to try to start something?"

"Think! That's exactly what he's going for. One last big alley fight. One last brawl. When they cut him down—do you suppose they'll stop with him? They'll kill us, and then they'll go in and stamp Earth flat! You know it as well as I do."

"I don't know, Mac," I said. "Go easy." I could feel the knots in my stomach. I didn't want any trouble. Not from the stoker, not from Mac. None of us wanted trouble—not even Mac, but he'd cause it to get rid of it, if you follow what I mean about his kind of man.

Mac hit the viewport with his fist. "Easy! Easy—nothing's easy. I hate this life," he said in a murderous voice. "I don't know why I keep signing on. Mars to Centaurus and back, back and forth, in an old rust tub that's going to blow herself up one of these—"

Daniels called me on the phone from Communications. "Turn up your Intercom volume," he said. "The stoker's jamming the circuit."

I kicked the selector switch over, and this is what I got:

"—so there we were at a million per, and the air was gettin' thick. The

Skipper says 'Cheer up, brave boys, we'll—'"

He was singing. He had a terrible voice, but he could carry a tune, and he was hammering it out at the top of his lungs.

"'Twas the last cruise of the Venus, *by God you should of seen us! The pipes were full of whisky, and just to make things risky, the jets were . . ."*

The crew were chuckling into their own chest phones. I could hear Daniels trying to cut him off. But he kept going. I started laughing myself. No one's supposed to jam an intercom, but it made the crew feel good. When the crew feels good, the ship runs right, and it had been a long time since they'd been happy.

He went on for another twenty minutes. Then his voice thinned out, and I heard him cough a little. "Daniels," he said, "get a relief down here for me. *Jump to it!*" He said the last part in a Master's voice. Daniels didn't ask questions. He sent a man on his way down.

He'd been singing, the stoker had. He'd been singing while he worked with one arm dead, one sleeve ripped open and badly patched because the fabric was slippery with blood. There'd been a flashover in the drivers. By the time his relief got down there, he had the insulation back on, and the drive was purring along the way it should have been. It hadn't even missed a beat.

He went down to sick bay, got the arm wrapped, and would have gone back on shift if Daniels'd let him.

Those of us who were going off shift found him toying with the theremin in the mess compartment. He didn't know how to play it, and it sounded like a dog howling.

"Sing, will you!" somebody yelled. He grinned and went back to the "Good Ship *Venus*." It wasn't good, but it was loud. From that, we went to "Starways, Farways, and Barways," and "The Freefall Song." Somebody started "I Left Her Behind For You," and that got us off into sentimental things, the way these sessions would sometimes wind up when spacemen were far from home. But not since the war, we all seemed to realize together. We stopped, and looked at each other, and we all began drifting out of the mess compartment.

And maybe it got to him, too. It may explain something. He and I were the last to leave. We went to the bunkroom, and he stopped in the middle of taking off his shirt. He stood there, looking out the porthole, and forgot I was there. I heard him reciting something, softly, under his breath, and I stepped a little closer. This is what it was:

"The rockets rise against the skies,
Slowly; in sunlight gleaming
With silver hue upon the blue.
And the universe waits, dreaming.

"For men must go where the flame-winds blow,
The gas clouds softly plaiting;
Where stars are spun and worlds begun,
And men will find them waiting.

"The song that roars where the rocket soars
Is the song of the stellar flame;
The dreams of Man and galactic span
Are equal and much the same."

What was he thinking of? Make your own choice. I think I came close to knowing him, at that moment, but until human beings turn telepath, no man can be sure of another.

He shook himself like a dog out of cold water, and got into his bunk. I got into mine, and after a while I fell asleep.

I don't know what MacReidie may have told the skipper about the stoker, or if he tried to tell him anything. The captain was the senior ticket holder in the Merchant Service, and a good man, in his day. He kept mostly to his cabin. And there was nothing MacReidie could do on his own authority—nothing simple, that is. And the stoker had saved the ship, and . . .

I think what kept anything from happening between MacReidie and the stoker, or anyone else and the stoker, was that it would have meant trouble in the ship. Trouble, confined to our little percentage of the ship's volume, could seem like something much more important than the fate of the human race. It may not seem that way to you. But as long as no one began anything, we could all get along. We could have a good trip.

MacReidie worried, I'm sure. I worried, sometimes. But nothing happened.

When we reached Alpha Centaurus, and set down at the trading field on the second planet, it was the same as the other trips we'd made, and the same kind of landfall. The Lud factor came out of his post after we'd waited for a while, and gave us our permit to disembark. There was a Jek ship at the other end of the field, loaded with the cargo we would get in exchange for our holdful of goods. We had the usual things; wine, music tapes, furs, and the like. The Jeks had been giving us light machinery lately—probably we'd get two or three more loads, and then they'd begin giving us something else.

But I found that this trip wasn't quite the same. I found myself looking at the factor's post, and I realized for the first time that the Lud hadn't built it. It was a leftover from the old colonial human government. And the city on the horizon—men had built it; the touch of our architecture was on every building. I wondered why it had never occurred to me that this was so. It made the landfall different from all the others, somehow. It gave a new face to the entire planet.

Mac and I and some of the other crewmen went down on the field to handle the unloading. Jeks on self-propelled cargo lifts jockeyed among us, scooping up the loads as we unhooked the slings, bringing cases of machinery from their own ship. They sat atop their vehicles, lean and aloof, dashing in, whirling, shooting

across the field to their ship and back like wild horsemen on the plains of Earth, paying us no notice.

We were almost through when Mac suddenly grabbed my arm. "Look!"

The stoker was coming down on one of the cargo slings. He stood upright, his booted feet planted wide, one arm curled up over his head and around the hoist cable. He was in his dusty brown Marine uniform, the scarlet collar tabs bright as blood at his throat, his major's insignia glittering at his shoulders, the battle stripes on his sleeves.

The Jeks stopped their lifts. They knew that uniform. They sat up in their saddles and watched him come down. When the sling touched the ground, he jumped off quietly and walked toward the nearest Jek. They all followed him with their eyes.

"We've got to stop him," Mac said, and both of us started toward him. His hands were both in plain sight, one holding his duffelbag, which was swelled out with the bulk of his airsuit. He wasn't carrying a weapon of any kind. He was walking casually, taking his time.

Mac and I had almost reached him when a Jek with insignia on his coveralls suddenly jumped down from his lift and came forward to meet him. It was an odd thing to see—the stoker, and the Jek, who did not stand as tall. MacReidie and I stepped back.

The Jek was coal black, his scales glittering in the cold sunlight, his hatchet-face inscrutable. He stopped when the stoker was a few paces away. The stoker stopped, too. All the Jeks were watching him and paying no attention to anything else. The field might as well have been empty except for those two.

"They'll kill him. They'll kill him right now," MacReidie whispered.

They ought to have. If I'd been a Jek, I would have thought that uniform was a death warrant. But the Jek spoke to him:

"Are you entitled to wear that?"

"I was at this planet in '39. I was closer to your home world the year before that," the stoker said. "I was captain of a destroyer. If I'd had a cruiser's range, I would have reached it." He looked at the Jek. "Where were you?"

"I was here when you were."

"I want to speak to your ship's captain."

"All right. I'll drive you over."

The stoker nodded, and they walked over to his vehicle together. They drove away, toward the Jek ship.

"All right, let's get back to work," another Jek said to MacReidie and myself, and we went back to unloading cargo.

The stoker came back to our ship that night, without his duffelbag. He found me and said:

"I'm signing off the ship. Going with the Jeks."

MacReidie was with me. He said loudly: "What do you mean, you're going with the Jeks?"

"I signed on their ship," the stoker said. "Stoking. They've got a micro-

nuclear drive. It's been a while since I worked with one, but I think I'll make out all right, even with the screwball way they've got it set up."

"Huh?"

The stoker shrugged. "Ships are ships, and physics is physics, no matter where you go. I'll make out."

"What kind of a deal did you make with them? What do you think you're up to?"

The stoker shook his head. "No deal. I signed on as a crewman. I'll do a crewman's work for a crewman's wages. I thought I'd wander around a while. It ought to be interesting," he said.

"On a Jek ship."

"Anybody's ship. When I get to their home world, I'll probably ship out with some people from farther on. Why not? It's honest work."

MacReidie had no answer to that.

"But—" I said.

"What?" He looked at me as if he couldn't understand what might be bothering me, but I think perhaps he could.

"Nothing," I said, and that was that, except MacReidie was always a sourer man from that time up to as long as I knew him afterwards. We took off in the morning. The stoker had already left on the Jek ship, and it turned out he'd trained an apprentice boy to take his place.

It was strange how things became different for us, little by little after that. It was never anything you could put your finger on, but the Jeks began taking more goods, and giving us things we needed when we told them we wanted them. After a while, *Serenus* was going a little deeper into Jek territory, and when she wore out, the two replacements let us trade with the Lud, too. Then it was the Nosurwey, and other people beyond them, and things just got better for us, somehow.

We heard about our stoker, occasionally. He shipped with the Lud, and the Nosurwey, and some people beyond them, getting along, going to all kinds of places. Pay no attention to the precise red lines you see on the star maps; nobody knows exactly what path he wandered from people to people. Nobody could. He just kept signing on with whatever ship was going deeper into the galaxy, going farther and farther. He messed with green shipmates and blue ones. One and two and three heads, tails, six legs—after all, ships are ships and they've all got to have something to push them along. If a man knows his business, why not? A man can live on all kinds of food, if he wants to get used to it. And any nontoxic atmosphere will do, as long as there's enough oxygen in it.

I don't know what he did, to make things so much better for us. I don't know if he did anything, but stoke their ships and, I suppose, fix them when they were in trouble. I wonder if he sang dirty songs in that bad voice of his, to people who couldn't possibly understand what the songs were about. All I know is, for some reason those people slowly began treating us with respect. We changed,

too, I think—I'm not the same man I was . . . I think—not altogether the same; I'm a captain now, with master's papers, and you won't find me in my cabin very often . . . there's a kind of joy in standing on a bridge, looking out at the stars you're moving toward. I wonder if it mightn't have kept my old captain out of that place he died in, finally, if he'd tried it.

So, I don't know. The older I get, the less I know. The thing people remember the stoker for—the thing that makes him famous, and, I think, annoys him—I'm fairly sure is only incidental to what he really did. If he did anything. If he meant to. I wish I could be sure of the exact answer he found in the bottom of that last glass at the bar before he worked his passage to Mars and the *Serenus,* and began it all.

So, I can't say what he ought to be famous for. But I suppose it's enough to know for sure that he was the first living being ever to travel all the way around the galaxy.

THE END

THE ANALYTICAL LABORATORY

The standings in the November, 1958 issue worked out like this:

PLACE	STORY	AUTHOR	POINTS
1.	Stimulus	Andrew Salmond	1.41
2.	Unhuman Sacrifice	Katherine MacLean	2.88
3.	A Bicycle Built for Brew (Pt. I)	Poul Anderson	2.92
4.	Goliath and the Beanstalk	Christopher Anvil	3.47
5.	Gifts	Gordon R. Dickson	3.94

And that somewhat surprised me; I thought "Bicycle" a lovely piece of frabjous nonsense. Not that the two stories that topped it weren't good—but usually serials (despite objections from readers who don't like waiting,) persistently take first place.

Then came the December results:

PLACE	STORY	AUTHOR	POINTS
1.	A Bicycle Built for Brew (Pt. II)	Poul Anderson	2.47
2.	The Queen Bee	Randall Garrett	2.80
3.	Ministry of Disturbance	H. Beam Piper	3.00
4.	Triggerman	J. F. Bone	3.70
5.	Seller's Market	Christopher Anvil	4.00

(*Continued on page 99*)

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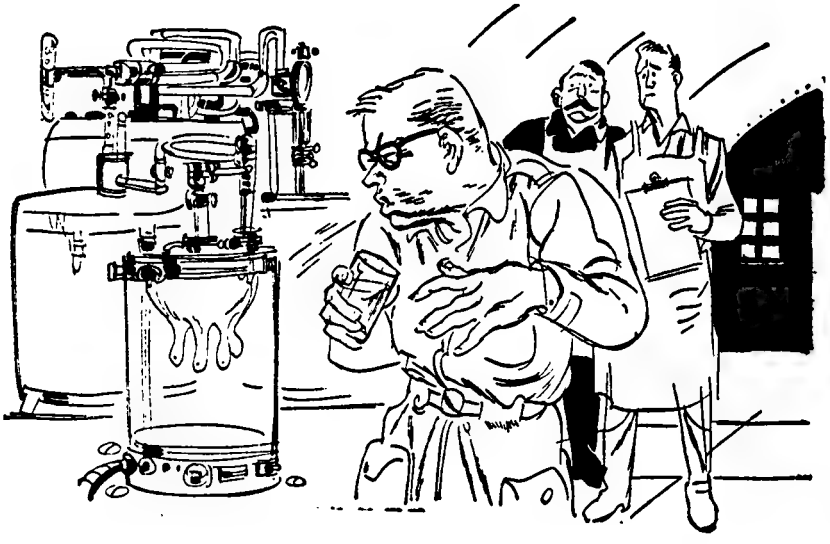

DIDDLE DIDDLE!

BY CALVIN M. KNOX

Research, when it's really done right, is a highly personal business . . . and lots of fun. And it usually sounds sillier'n all git out!

Illustrated by Summers

HE day that Hydroponics Technician Al Mason got his big idea started out just like any other at Lunar Base Three—that is, with a bunch of bloodshot-eyed and fuzzy-brained scientists and engineers going through the motions of eating breakfast.

The first meal of the day at Lunar Base Three was never a very pleasant proposition. Lunar Base Three was manned entirely by a bachelor staff of American chemists, engineers, and other miscellaneous researchers. With no women around at present, and with no stringent curfew laws to hamper them, the men of Lunar Base Three thought nothing of staging lively bull-sessions that lasted far into the "night" —as late as two or three in the morning, by their arbitrary time-scale.

But there was a very definite reveille bell at half past seven in the morning on that same time-scale, and a very definite time during which the mess contingent served breakfast. So, each "morning," several dozen men gathered, puffy-faced and bleary-eyed, after only three or four or sometimes five hours of sleep. Conversation was rarely very inspired at the breakfast table of Lunar Base Three, as a result. It was largely a matter of muttered grunts and yawns, pass-me-the-sugar, and vague complaints about the traditional lack of quality of the synthetic food served on the Moon.

Hydroponics Technician Al Mason had been up past three the night before, jawing with a visiting astronomer from Lunar Base One who was trying to uphold a Hoylean continuous-creation cosmology. Though he was a 'ponics specialist, Mason thought nothing of holding forth in discussion on astronomy, paleontology, biochemistry, or any other field that happened to be the topic of the moment.

Just now Mason was as red-eyed and as sleep-befogged as the rest of the men in Lunar Base Three. But an idea was beginning to blossom in his skull, forcing its way upward through the murkiness of fatigue.

"Powdered milk," Mason grumbled sourly. "Every morning, powdered milk! Thin anemic stuff that no self-respecting calf would sniff twice." He poured himself a glassful and sipped at it glumly.

"If you'd drink coffee in the morning," commented Biochemist Maury Roberts in a waspish tone, "you wouldn't have to grouse about the milk all the time."

"I *like* milk," Mason replied stolidly. "I *don't* like coffee. That's all there is to it."

"Retarded maturity," remarked Sam Brewster, an Electronics man. "Delayed adolescence, that's what it is. *That's* why you still drink milk!"

Hydroponics Technician Mason was six feet three and weighed two hundred pounds under Earth gravity. It was highly unlikely that he suffered from any such fixations. He chuckled grimly at Brewster's com-

ment and took another swig of milk. "Go ahead, psychoanalyze me if you want to! But I still like milk, *real* milk, not this ersatz stuff."

The milk pitcher passed round the table. Some of the men were having dry cereal; others liked milk in their coffee. And one thing was evident to all: kidding aside, the synthetic milk *was* getting wearisome. As were all the other synthetic foods, the vegeburgers and the yeast-cakes and all the rest. But there was no helping the situation; at this stage of Lunar exploration, space travel was a fantastically costly proposition. It was more important to devote precious cargo space to vital instruments than to steaks and chops. The synthetics weren't as tasty, but they were just as nutritious as the real goods—or so the experts swore —and they took up only a tenth as much space as real food on each Moonbound cargo ship from Earth.

Al Mason leaned sleepily forward, cradling the milk glass in his big hands, thinking bleakly of how pleasant it would be to have real food at the base—not just at Christmas time, when the budget-happy appropriators in Congress relented for the sake of sentiment, but all the blessed year round. Real food. Good honest homogenized Grade A, not ersatz.

Mason downed the last of his milk, grimaced, and blinked as the idea that had been forming all morning suddenly erupted into the conscious levels of his mind. He started to laugh. It was a preposterous idea, sure. But he liked it.

"What's so funny, Al?" Brewster asked.

Mason looked cautiously over his shoulder at the other table, where the top brass were breakfasting. Base Commander Henderson was shoveling a synthetic omelet into his mouth and was thumbing through the early-morning news bulletins off the Washington ticker, simultaneously. But Base Commander Henderson had notoriously sharp ears. And the C.O. might not care too much for the project Mason had just conceived. The base's budget was too skimpy to permit horseplay.

In a low voice Mason said, "I just had a notion—about synthetic milk, and all. It's an idea we could have some fun with, maybe."

"Well?" Maury Roberts said. "What is it?"

"Not here," Mason murmured. "Brass might downthumb it. I'll tell you tonight, after hours." He chuckled quietly to himself. "I think we're going to have some fun."

Al Mason said nothing about his great idea all day, not to anybody. He let it ripen and take shape in his mind. He moved busily and efficiently through the 'ponics chamber, tending to his daily chores and filing his daily reports. The hydroponics work had to come before anything else, and Mason knew it. He hadn't been sent up here to the Moon for his health.

Eight small domed bases dotted

the face of the Moon in that year of 1995. Three of the bases were American, three Russian, one Chinese, one Indian. Although the cold war had long since relaxed in intensity, assuming the nature of a perpetual stalemate rather than a helter-skelter scramble for destruction, the rivalry between the various Moon bases remained keen. American science vied with Russian science for supremacy, and the men of the Lunar bases knew they had to work at top productivity all the time. It was a Red Queen's Race, with both sides compelled to flail themselves on just so they could remain where they were.

America's Lunar Base One was a gigantic astronomical observatory, unfettered by atmospheric turbulence. Lunar Base Two, like its Russian counterpart, was a military installation, complete with a dusty stockpile of fission-fusion-fission bombs and guided missiles. Most civilized peoples of the world preferred not to think much about America's Lunar Base Two and the Russian equivalent, which was known as Outpost Lenin.

Lunar Base Three was devoted to basic scientific research of all kinds. It had been hard, at first, to ram the concept of a Base Three through the minds of the members of the various Appropriations Committees, and even now Base Three did not have all the money it needed. But it carried on valuable research in multitudinous fields despite the annual harrying it received at budget time.

The Moon is a natural place for cryogenics research; cryogenics, therefore, was a major feature of Base Three. Hydroponics was another important project; as Man's dominion extended outward into space, it would be increasingly more important to find ways of maintaining a Terrestrial ecology. Also carried on at Base Three were high- and low-pressure physics, solid-state work, advanced chemical research into atmosphere purification, and several dozen other things. There was remarkably little supervision, and no quota of practical results was demanded—though the men of Base Three were well aware that their base would continue to exist only so long as the United States Government remained in a free-spending mood.

The ambition of every bright young science student in the United States was to qualify for acceptance as a researcher in Lunar Base Three. While in Russia, the cream of the cream was chosen for similar work at Outpost Kapitza in Ptolemaeus Crater.

The working day at Lunar Base Three theoretically ended at 1700 hours. In practice, the men were under their own supervision, which meant they were free to knock off at noon when they wanted to, and were equally free to work clear through till morning reveille if the urge smote them to do so. Responsible-minded people rarely take advantage of such setups. The average work-week among the men of Lunar Base Three was in the vicinity of

eighty or ninety hours a week. Occasionally Commander Henderson had to *order* a man to take some time off, for the sake of health.

But there were several recreation-sheds for the benefit of men who wanted to relax for after-hours bull sessions and the like. Three nights a week a movie was shown. But this was not a movie night. Hydroponics Technician entered Recreation Shed B about 1900 hours that night, after shutting up shop at the 'ponics chambers.

None of the base's administrative officials happened to be in the shed, for which Mason was grateful. But five of his fellow workers were there —Sam Brewster, Maury Roberts, Len Garfield of Cryogenics, Dave Herst of Chemistry, and Nat Bryan of the Solid-State team.

When Mason walked into the recreation shed he was humming an old nursery rhyme, singing a little of it in an erring basso:

Hi diddle diddle,
The cat and the fiddle,
The cow jumped over the moon—

Sam Brewster put down the microtape he was scanning and said, "Lord, Mason, you really *are* reverting to childhood, eh? Mother Goose, now? What's next?"

"Thumb-sucking," suggested Len Garfield.

"It's those weird chemicals he uses in the 'ponics lab," Maury Roberts offered. "They're operating on his metabolism and reversing the direction of his—"

"O.K., hold it!" Mason said, holding up one big hand for silence. "As some of you birds may possibly remember, I had an idea, this morning."

"Hooray! Mason had an idea! Hooray!"

Mason glowered at Len Garfield for a moment. "Thank you. To continue: at breakfast, while grousing about the food, I thought to myself in the good old tradition of challenge-and-response, as follows: I despise this synthetic milk. How can I get some real fresh milk? And the answer came: the only place you can get fresh milk from is a cow."

"A cow? On the Moon?" snorted Sam Brewster.

"You could let it graze in the 'ponics shed," Maury Roberts ventured.

"O.K., wiseguys. Let me finish." Mason knotted his thick fingers together thoughtfully. "Obviously there's no place in Lunar Base Three or anywhere else on the Moon for a live cow—and Earth wouldn't ship one up to us, anyway, not with space freight costs what they are. *But*—we're all trained scientists, I said to myself. We range virtually the entire spectrum of man's resourcefulness, I said to myself. Why not, I said to myself—why not *build* a cow?"

For a moment there was absolute silence in the recreation shed. Then five mouths dropped open in amazement.

"Build a cow?" three men repeated blankly.

"Huh?" two men said almost simultaneously.

Al Mason nodded. "Yeah. Why not? I mean, as a kind of recreational project. Of course, the brass might not go for it too much, but we could keep it hush-hush until we got some results—"

"Build a cow?" Garfield said. "Complete, tail and all, and an artificial moo?"

Mason scowled pleasantly. "Cut the kidding. I mean a mechanical device that will produce milk, real milk. I visualize a heap of machinery with an output at one end, not anything that necessarily resembles a cow in anything but function. Clear?"

Len Garfield grinned. "Clear. Quite clear."

Mason looked around. The grin was spreading. It had taken only a few seconds for the initial shock of the idea to wear off. Mason knew that each of them was beginning to frame blueprints already. Not that they gave much of a damn about getting real milk or not; they had all said often enough that they could get along on synthetic cow-juice in their coffee. But it was the idea that caught them. They were men who didn't need to draw a distinction between work and play. Tinkering, building things—that was both work *and* play for them.

Mason said, "I can't carry this project out by myself. Are you five with me?"

He got five nods, one after another.

"I didn't think you guys would back down from something like this," Mason said. "We can call it Project Bossie. Let's toss some ideas around."

Ideas were tossed. The brainstorming session lasted, as usual, well past the arbitrarily-defined Lunar "midnight," and got more heated as it went.

"We understand the metabolism of a cow," Mason said. "We know how a cow produces milk. We know what cow's milk consists of—fat, lactose, protein, water. We know how a cow's digestive system works. So why can't we build a cow ourselves?"

"*I* don't know how a cow's metabolism works," Len Garfield said. "It's not a subject I'm likely to need in Cryogenics work. Maury, will you fill me in?"

The biochemist scratched the back of his neck thoughtfully. "Well, a cow's intake is mostly grass, of course. Which is largely cellulose. The cow grinds the cellulose up and boots it around through its four stomachs. Microorganisms in the cow's innards break the cellulose down into simpler compounds. Along the way, the stomach contents get fermented, then digested. The cow takes roughage, even sawdust if it has to, and converts it into energy-yielding substances.

"As for the milk—that's manufactured from substances in the cow's

blood. A cow's udder has milk-forming cells that secrete milk into alveoli that pass the milk out through a duct, where it collects and is drained off. As Al said, milk's made up of fats, lactose, proteins, plus a lot of water. The fats are the common long-chain variety plus some short-chain fats which are quite unique. It's a pretty clear process, seems to me. All we need to do is duplicate the chemical reactions that take place all along the way, starting with a cellulose intake that gets broken down eventually into amino acids and short-chain fats. If we match the process step-by-step mechanically, there's no reason why we should not get authentic milk at the other end."

"I can think of a reason," Sam Brewster said. "A cow's udder is one devil of a complicated affair. If you are expecting me to build a mechanical duplicate of a filter system that precise, let me tell you right now that I'm not guaranteeing results in less than ninety years."

"That's the one part of the system that doesn't need to be mechanical," Maury Roberts said. "I agree, building a filter to draw milk out of the system is beyond our ability—but we can always hook a *real* udder into the system to handle the output."

"Eh?" Brewster said. "Where are you going to get—"

"I've *got*," Roberts said. The biochemist grinned. "I suspect you knew about this, Al—didn't you?"

Mason nodded. "Maury has quite a collection of tissue extracts sitting in his deep freeze for biological research. Including, so I've learned, a couple of snips of tissue from a cow udder."

"It wouldn't be any trouble at all to borrow a few cells from that test tube," Roberts said. "Set up an incubator, grow the cells in a protein nutrient bath. They'll grow indefinitely, doubling every forty-eight hours or so. In hardly any time at all we'll have enough udder tissue to extract all the milk we want."

"That takes care of the output, I suppose," Nat Bryan said. "But how about these symbiotic microorganisms that take part in the digestive process? You don't have any of *those* in the deep freeze!"

"We'll synthesize 'em," Dave Herst said. "Over at our lab we can whip up an enzyme to do most any job. You just tell me what's needed, Maury, and—"

"*I* know what's needed," Sam Brewster objected. "We need a whole slew of equipment. What we're building amounts to a still that yields milk instead of booze, and we're going to need plenty of hardware for it."

"We'll pinch it," Mason said quietly. "Item by item. Nobody's going to squawk if we happen to requisition a few yards of tubing or a couple of metal vats for our work. The trick is not to be too conspicuous." He grinned. "It's more constructive than gin rummy, anyhow."

He saw by the sly looks on their faces that they were completely

hooked. There hadn't been a really good gag at Lunar Base Three in a couple of months, not since a computer man had programmed one of the heavy-duty robot drudges to give hotfoots. Mason could hardly wait until the first quart of milk came from the synthetic cow.

They continued far into the night, raising possible objections and squelching them, putting forth suggestions and ideas. About three a.m. they decided they had had it for the night. Mason gathered up the sheaf of block-outs that had been scribbled during the evening. It was going to take plenty more jaw-thinking before they could begin on the schematics. But the general concept was clear already: a mechanical duplication of the bovine digestive system, coupled with a tissue-culture-grown mammary gland at the output.

The next morning at breakfast they were their usual uncommunicative selves, as might be expected after four hours of sleep. After breakfast and before starting work for the day, Mason paid a visit to the office of Base Commander Henderson and formally applied for permission to use one of the base's vacant labs.

Henderson glanced over the filled-out application form Mason had laid on his desk and said, "Are you branching out, Al?"

"I've got an idea, sir. I want to give it a try."

Henderson smiled. "That's what we're here for—to give things a try. Care to tell me about it?"

Mason's face reddened slightly.

"If it's all the same, sir, I'd prefer to keep it under my hat. At least until I see if it works out, anyway."

Nodding, Henderson said, "I suppose that's O.K. here." His eyes narrowed speculatively. "Ah . . . this project of yours isn't going to involve a change in the budget, is it?"

"No, sir. Any equipment needed will be covered by present appropriations."

"I'm glad to hear that," the C.O. said in a tired voice. "The people in Washington are snapping at my heels, Al. They want to peel five or ten or fifty million off our budget for the next fiscal year, and the way things are happening on Capitol Hill these days they may very well succeed. So this isn't the time to begin any ambitious or expensive new projects. We may be lucky just to hold the *status quo* here, after Congress gets through with our appropriation for next year."

"I understand, sir. But I don't think this is going to be very expensive. It's just—well, call it a sideline, sir."

Henderson smiled. "Very well, Al. Permission granted for use of the empty lab."

He initialed the sheet and dropped it into a file basket. Mason thanked him, stepped outside, and picked up a phone. He called Maury Roberts at the Biochemistry Unit and said, "Everything's O.K. The old man is letting us use Room 106a."

"Swell. I've got the udder-tissue out of the storage freeze, and I just popped it into the nutrient bath. And last night after we split up I worked out a diagram blocking out the cow's digestive system unit by unit. We can use that as our jump-off point."

"Right. See you later," Mason said happily. He hung up and jogged across the open area between research huts to his own domain.

For the rest of the day he labored over his hydroponics tanks as if they were the most important things in the universe—which they were, at the moment, to him. But, come evening, 'ponics was shoved into the back of his mind and Project Bossie advanced to the forefront.

The six men spent the first week doing mouthwork — throwing out ideas, pulling them apart, putting them back together. It was a week of bickering and haggling, a week of bantering and chaffing. But it was also a week of results. By the end of the week they had a reasonably operational plan in the works. There was plenty of disagreement, of course, but that only added spice to the project. There were long hours of completely irrelevant hairsplittings and side-issues—but, somehow, the irrelevancies turned out to be relevant after all, later on.

Meanwhile, the bit of tissue in the Biochem lab grew . . . and grew . . . and grew. Cells nourished by benevolent proteins and warmed by the incubator divided, and divided again. By the end of the first week, the cells formed a visible spot on the surface

of the nutrient base. Growth continued.

Sam Brewster worked up a set of blueprints for electronically-controlled feeder mechanisms. Dave Herst quietly worked out a few of the problems of enzyme synthesis. Mason co-ordinated. Slowly, over a couple of weeks, the contradictory ideas of six men turned into one master plan—Project Bossie.

The first installations went into place in the fifth week of the project—four massive copper kettles, linked by plastic tubing. The kettles represented the four stomachs of a cow. Sam Brewster rigged a force-pump up to keep the digestive products moving along the system. The pump, like the kettles, came out of the base's excess stores, on special requisition. Nobody asked any questions. And no member of the project cared to volunteer any information.

A fifth kettle was added, and a sixth, and a seventh, as the project continued. Work was carried on, generally, in after-hours time; none of the cow-builders was foolish enough to neglect his own specialty during the day.

After the seventh week, it started to become apparent that duplicating the innards of a cow was not a simple matter of rigging a continuous flow-line. There were all sorts of complications. An agonizing reappraisal became necessary.

Some of the artificial enzymes reacted unfavorably with others; it became necessary to devise an intricate enzyme-injection scheme to maintain proper digestive control. The acetic acid produced in one of the four stomachs as part of the process had unhappy effects on some of the tubing, which had to be replaced. A complex and expensive centrifuge had to be surreptitiously snaffled from Maury Roberts' biochemistry section and introduced into the works to separate the digestive products properly, in the absence of the simple hormones that took care of that job in a cow.

Toward the ninth week of the project, glimmers of light began to show. The six men were doggedly overcoming one kink after another in the unexpectedly complicated process, and they were getting a huge boot out of solving each new contretemps as it arose.

But a new cloud appeared on the horizon that week. And a quite unexpected thunderbolt descended.

The first word arrived one morning in the mess hall. The usual synthetics were getting the usual reactions when one of the signal-room orderlies entered the mess hall, snapped to attention in front of the rear table where the top brass ate, and plunked a yellow message sheet down in front of Base Commander Henderson. Henderson's immediate profane outburst silenced all conversation at both tables.

There was a long, uneasy moment of calm. Then the Base Commander rose and looked around the mess hall. His face drooped in a dark scowl.

In somber tones he said, "Gentle-

men, I hate to ruin your meal like this, but I have some bad news that might as well be shared with the entire staff." He chewed at his lower lip for a moment—a sign, everyone knew, not so much of nervousness as of smoldering anger. He went on, "As you may know but probably don't care, this is an election year down below in the States. Ten months from now a lot of congressmen and senators are going to lose their jobs, unless they can convince their constituents meanwhile that they deserve to hold office for another term. So this is the time of year when senators and congressmen go junketing all over hither and yon, trying to dig up scandals and such.

"To come to the point, gentlemen: I've just received word that the next cargo ship from Earth, which is due here in twenty-seven days, is bringing us three senators and three representatives. They're coming up to investigate our operations up here, and to find out if the money of the taxpayers is being wasted." Commander Henderson coughed thinly. "You'd better hide the pin-up pictures until they leave. There's no telling how much they'll chop off our appropriation if they find instances of . . . ah . . . moral turpitude."

When Al Mason and his five cohorts gathered in Laboratory 106a that night for their regular session of work on Project Bossie, they all wore sheepish, abashed expressions—the sort of look a man might wear if he picked up a kitten to stroke it and abruptly discovered he was clutching a tiger by the tail.

"Well," Mason said, surveying the imposing array of gadgetry which was Project Bossie. "I knew it was too good to last. Senators! Congressmen!"

"Dirty snoopers," Sam Brewster muttered.

"We'll have a fine time explaining *this* to them," Nat Bryan said, waving a hand at the installation. "How will they understand that we were just having a little fun?"

"Fun," Maury Roberts said morosely. "Congressmen don't think scientists are *supposed* to have fun. We're supposed to be deadly serious characters who speak in four-syllable words interspersed with equations. If they find out I hooked a nine hundred dollar centrifuge just for fun, they'll—"

"And a hundred bucks' worth of relays and transistors," Sam Brewster said.

"And an incubator for that udder," added Dave Herst.

"And all these kettles, and the tubing," Len Garfield said. "The flow-meters, the pipelines, the refrigeration unit—"

"So?" Al Mason demanded loudly. "Are you guys voting to pull out?"

"No, but—"

Mason cut into Sam Brewster's reply. "No, but what? Do you want to break the project up and return all this stuff to the stores? That way the investigating committee will

never find out what we've been up to. And we can tell Henderson that our project was a failure and we disbanded it."

"But it's not a failure," Dave Herst said vehemently. "Another month and we may have the whole thing licked! We can't give up now, Al."

"O.K., then," Mason said. "Stop worrying about congressmen. When they come, we'll just suspend operations in here and hope they don't ask any questions. We're too deep into this thing to give up now. Yes?"

"I'll go along with you, Al," Nat Bryan said.

"Same here," put in Dave Herst.

The others agreed. Project Bossie was not to be discontinued. Work would proceed.

Work proceeded. The tissue-culture udder had now reached functional size, and one night it was transported from the Biochemistry Unit to Lab 106a, incubator and all, and hooked into the system. It was the eleventh week. It was now possible to introduce waste cellulose at the intake of the artificial cow and have it pass through the four "stomachs" to be broken down into the desired products. The result was synthetic blood from which the udder could extract milk. Mason computed that three hundred quarts of such blood would be needed to produce a quart of milk. It wasn't a bad ratio, but they determined to improve on it.

Other unforeseen hitches developed. New bugs were found in the system every day. The first batch of milk that was produced, in the twelfth week, was vile stuff, about sixty per cent fat and fifteen per cent protein; it looked curdled the moment after it appeared, and rapidly got worse. It was discovered that the bleeder-lines at the final stage of the digestive process were faulty; glucose and galactose were being held back, too much fat admitted. The men went to work on this problem.

They solved it. But the solution involved rigging a new and elaborate system of tubing. The synthetic cow was taking on frightening aspects by this time. Dimly discernible beneath the network of pipes and tubes and stopcocks were the original four kettles of the digestive system. But now the apparatus took up virtually every square inch of floor space in Laboratory 106a. It sprawled toward the four corners of the room and up to the ceiling.

A new flaw was discovered: a vital liver secretion was missing, causing difficulties in the process of fat digestion. A cow's milk has no more than four per cent fat in it; they were unable to lower the fat percentage below twenty-five per cent. Some quick research produced the reason. But a week of fruitless labor told them that it was going to be an enormous task to duplicate mechanically the necessary organ of secretion.

The project tottered on the brink of failure.

Nat Bryan made a suggestion:

"We have a real udder. How about a real liver, too?"

Maury Roberts prowled through the inventory of the Biochem unit and discovered liver tissue in cold storage. The next day, a second incubator was in use; Roberts was busy growing a cow liver. It was either that or abandon the project.

Day by day the cells proliferated. The udder, meanwhile, was doing splendidly, and had to be trimmed back every three days to keep it from growing unlimitedly. The men of Project Bossie watched the growth of the udder with the same perplexity as they had watched the growth of the mechanical end of the system. The job had turned into an enormously complex undertaking.

"If I had known what I was getting into," Al Mason remarked in the thirteenth week, "I probably would have kept my mouth shut."

"Too late for regrets, Al," Sam Brewster said.

Mason nodded. And though they had done plenty of sweating to get the extra equipment, it *had* been fun all the way. Even if it had gotten out of hand more than a little. It was too late to give up now. Mason, Brewster, Roberts, Garfield, Herst, and Bryan were too deeply committed even to entertain the idea of quitting.

Success was approaching.

But so, unfortunately, were the congressmen.

They arrived right on schedule, 0900 hours on the 28th of January, 1996. There were six of them, as advertised. The total mass of the six legislators and their belongings was better than thirteen hundred pounds, and therefore that much useful equipment had to be displaced on the cargo ship. As Commander Henderson mournfully explained, there would be no new supply of reading-tapes this month, nor any shipments of beer. A small comptometer requisitioned by the astronomers in Base One had been left over till next time, too. It couldn't be helped; the legislators had a right to visit the Lunar installations if they chose, and since they were the ones who voted the appropriations, there was no gainsaying their wish to visit the Moon bases.

The morning of the delegation's arrival, each man in Base Three found a mimeographed memo waiting for him on his breakfast plate:

TO: ALL STAFF
FROM: BASE ADMINISTRATOR HENDERSON
SUBJECT: VISITORS
DESTROY AFTER READING

At 0900 today the ferry-ship is bringing us six members of Congress. They will be quartered at Base Three for the next ten days, before moving over to investigate the other bases. They are to be treated with utmost respect while they are here! I'm not joking. These boys can cut us off without a nickel in next year's budget.

Normal routines are to prevail while they're here. I don't intend to

put on a special taut-ship demonstration for their benefit. But try to keep things tidy, and avoid any conspicuous material extravagance that might be tough to explain. Remain friendly, answer questions if they're asked, and in general try to show them what a live-wire job we're doing for Joe Taxpayer down there in the States.

Make a special effort to keep our visitors from blundering into high-voltage lines, walking outdoors without helmets and suits, and stuff like that. The publicity would be very very doubleplus ungood if something happened to one of our guests.

And remember—they aren't going to be here forever, even if it seems that way. Only ten days.

Al Mason put down the memo sheet and peered owlishly at his messhall neighbor, Sam Brewster. *"Avoid any conspicuous material extravagance that might be tough to explain!"* he quoted. "Talk about locking the barn door too late! We have *already* been extravagant, and I'd hate to have to explain."

"If the C.O. ever pokes his nose into 106a," Brewster said, "we're going to *have* to explain. You better start thinking up something convincing, Al."

Mason didn't say anything. He grinned palely and took a long, deep, unsatisfying slug of his synthetic milk.

The senators were quartered in the Administration hut, while the congressmen had to put up with accommodations in one of the storage shacks. They were old men, the six of them—the youngest couldn't have been much less than fifty-five—and they just *loved* the low gravity. But from the first hour, when they glanced beady-eyed around the base as if looking for their first target, it was evident to all hands that a real going-over was in the cards for the next ten days.

The six members of Project Bossie decided that for the nonce it was best to keep out of Laboratory 106a for the next ten days, except for performing routine operations necessary for maintenance of the complex contraption. There would be the deuce to pay if the investigating committee ever caught on. For one thing, the installation had become immense. For another, better than ten thousand dollars worth of good equipment had been sidetracked into the project by this time, along with a good many man-hours of highly skilled time. It would be unwise in the extreme to let the visitors find out that six men, without the knowledge of the Base Commander, had squandered so much time and energy and money for anything so frivolous as the production of milk—and just for the fun of it.

So Mason and his fellow conspirators entered Laboratory 106a at odd hours just to keep things running—mostly to keep an eye on the nutrient bath that supported the rapidly sprouting liver tissue. The udder was doing fine.

Most of the time, during the first

two days of the legislative visit, Mason and all the other men of Lunar Base Three stuck close to their own specialties, performing routine tasks with grim efficiency. "The trick is," Al Mason explained in the recreation shed, "to *look* busy all the time, even when you're doing nothing at all. Carry some equipment with you and pretend to be testing the tensile strength of the dome, if you can't manage to find anything else to do."

It was the only way. It was impossible to convince a bunch of congressmen that men who were drawing ninety dollars a day and better could actually be accomplishing anything by sitting with their legs crossed on their desks, drawing doodles on clipboards. So Base Three took on a quite unaccustomed bustle of energy. Nothing valuable was accomplished, of course, during those days. Creative thinking can't be done to order, on a nine-to-five basis.

It didn't take long to learn who were the legislators to watch out for. Representative Claude Manners was the fiercest ogre of the lot—a crusty New Englander from, of all places, Mason's home state of New Hampshire. Representative Manners regarded any sort of governmental expenditure with horror. He persisted in wandering around the base asking, in a thin and insistent voice, "Yes, but what *practical* use does this have?"

On the senatorial side, the hardest to deal with was Senator Albert Jennings of Alabama. Senator Jennings' favorite questions were, "Can't this project really be dispensed with?" and "Let me see the cost figures on this equipment, please."

It was trial by budget. Base Three was fidgety and tense. Liquor consumption went up thirty-eight per cent over normal, as did cigarette smoking, despite the fact that there had been no room on the last supply ship for the usual shipments of these commodities.

Al Mason began to wish he had never thought of building a synthetic cow. It was only a matter of time before the secret would be out.

And they were so close to the finish, too. Everything had seemed to check out at the last examination. The liver was thriving now—in fact, it was threatening to outgrow its space allotment, and Maury Roberts had to lower the incubator temperature in order to inhibit the organ's boundless growth. The rest of the system was in working order. If only those snoopers would leave the Base, Mason thought, so we could run the final tests—

On the fourth day after the arrival of the congressional commission, Al Mason was engaged busily in tidying up his hydroponics lab, in anticipation of a visit from Representative Manners later in the day, when his office phone rang.

He picked it up. "Hydroponics. Mason speaking."

"Al, Commander Henderson here. Think you can stop off at my office for a few minutes?"

"I suppose so, sir. You mean, right now?"

"Yes. Right now, if you're free." The commander's voice sounded oddly tense. Mason hung up, told his assistant he was leaving, and headed for Commander Henderson's office on the double.

The C.O. looked worried. His face was drawn and weary. The visit was telling on his nerves more than anyone's.

He said, in a ragged voice, "Al, about an hour ago I took the guests on a tour of the north end of the base. They came across Laboratory 106a."

Oh, oh, Mason thought sickly. "Yes, sir?"

Henderson flashed a faint smile. "That's quite an installation you've been building in there, Al. Quite an installation!"

"It *is* rather complex," Mason admitted.

Henderson nodded. The corners of his mouth quirked. "Ah—some of our guests were very interested in it. They wanted to know what function it performed. That's what Representative Manners asked me particularly—what function it performed."

"Function, sir?" Mason repeated lamely.

"Yes. Function." The commander stirred uneasily behind his desk. "I . . . ah . . . told them it was being used for biological research. They wanted me to be more specific, and I kept getting vaguer, and finally I had to admit that I didn't know *what* the damned pile of equipment was supposed to do! So I'm in a bit of hot water now, Al. They seem to have the idea that a Commanding Officer should be aware of every single project being carried on at his base."

Mason moistened his lips. He said nothing.

The commander continued, "With luck, I can wiggle out of this without too much trouble. But it may turn out to be very damaging. Tell me, Al—just in case they bother me about it again. What *is* that thing you've been constructing in 106a?"

Mason took a very deep breath. When he spoke, his voice came out thin and feeble. "It's a cow, sir."

The commander's double-take was admirably brief. He recovered equilibrium almost at once and said, "Let's have that again?"

Mason smiled humorlessly. "It's . . . uh . . . a device for processing cellulose and converting it to nutritive products, sir. Milk, to be precise."

Henderson was nodding slowly. "A cow. I see, Al. You built a machine that produces milk."

"Yes, sir. It's not quite finished, yet."

"Tell me: *why* did you feel it necessary to build such a machine?"

"Well . . . uh . . . it was sort of just for fun, sir. A recreational project. Only we didn't think it was going to use so much equipment, you see, and—" Mason saw the look in Henderson's eyes, and his voice trailed off.

"O.K., Al," Henderson said in a rigidly controlled voice. "You built it for fun. Well, I'm a mild-tempered man. I won't get sore. Just scram, over to the 'ponics chamber, and get to work. If anybody asks you, that thing in 106a is a biological converter. Make up some fancy double-talk. Whatever you do, *don't* let any of those congressmen find out that you built that expensive junk pile for the sheer joy of building it. Or that it's intended to produce milk. We'll never hear the end of this, if they catch wise. They'll have me accounting for every penny ever spent up here."

"Yes, sir."

"O.K. Now *get*."

Mason got.

The hydroponics man stepped out of Henderson's office and almost collided with Maury Roberts. The little biochemist started talking at once.

"I'm on my way over to 106a, Al. Bryan just stuck his nose in there and told me that the liver tissue is growing like crazy. I'll have to trim it back and dispose of the excess . . . Al, is there something wrong?"

"Yeah."

"You look terrible!"

"I *feel* terrible." Mason jerked his thumb back in the general direction of the Administration hut. "The Old Man just had me on the carpet. Seems the visitors snooped their way into the Project Bossie lab this morning and wanted to know what all the hardware was being used for."

"No!"

"Yeah. Well, the C.O. didn't know, so he bluffed them. But he doesn't know how long they're going to be satisfied with his bluff."

"Al, this is terrible!" Roberts exclaimed. "What's going to happen?"

Mason shrugged. "Henderson'll probably wiggle out of it, but you can bet he'll come down hard on us once the visitors are gone. He wasn't at all amused by the whole idea. Not one bit."

"What are we going to do?"

"Nothing," Mason said. "Just keep going through the motions. You go over to the lab and trim that liver, if you want to. I've got to get back to work."

"O.K. I hope we get out of this with our skins intact."

Roberts took off for Laboratory 106a at a quick trot. Mason sauntered morosely across the clearing. He did not even bother to try to look busy now. He stopped, stared up through the vaulting plastic roof of the dome at the night-shrouded Earth that hung in the sky.

Who needed these senators anyway? he asked himself.

Snoopers. Pennywise meddlers. But they were necessary evils, Mason admitted reluctantly. Only now the C.O. was in trouble, and it was a sure bet that once the delegation from Washington had left, there would be merry hell raised around Base Three. Creative independence was one thing; funneling all kinds of costly equipment into a silly enterprise like a synthetic cow was different. And if the truth ever leaked to the Appropriations Committee—

Mason shuddered. He admitted that the cow *had* gotten somewhat out of hand. But it had simply turned out to be a more complicated job than they had expected, that was all. It would have been foolish to give up halfway, so they had pipelined more equipment into Lab 106a, and then a little more, and then more than that. The "cow" had turned into a golem, or a Frankenstein monster.

Might as well return to the 'ponics lab and do some honest work, Mason thought wearily. He started off in that direction. He frowned. What had Roberts been trying to say? The liver was growing; so he would have to trim off the excess and dispose of it—

Wait a minute!

What Maury Roberts was trimming away was good edible meat. And if the machine could produce meat *and* milk—heck, Mason thought, it isn't as useless as it seems! We don't need to skulk and hide! We've invented something downright handy! But—

A sudden cry interrupted his train of thought.

"Hey, Al! Come here!"

Mason turned slowly. The door of the mess hall was open, and Rolly Firestone, Cook First Class, was standing in the opening, arms akimbo. Firestone was grinning.

"What is it, Rolly?" Mason grunted.

"Got something for you. Something you'll like, Al."

Shrugging, Mason walked over. Firestone's green eyes were alight with some secret glee. Crooking one finger, he led Mason through the mess hall and into the kitchen.

"You wait here," Firestone said. "I'll be right back."

Mason wondered impatiently what the cook was up to. But he had only a moment to wait. Firestone busied himself at the back of the kitchen and returned almost immediately holding a glass containing a white liquid.

"You're the one who's always been griping about the synthetic milk," Firestone said. "So I figured I'd give you a little treat. Just don't get me in trouble for it, that's all I ask."

Mason took the glass. He sniffed. It smelled like milk. It looked like milk.

"Go on," Firestone urged. "Drink it."

Mason took an experimental sip, then another, and then a hefty gulp. It *was* milk. And not synthetic, either. This was the pure authentic article, unadulterated, homogenized, creamy and rich to the taste. Milk.

"Where in blazes did you get it?" Mason demanded. It couldn't possibly be a product of the unfinished milk-still; in any event, Firestone knew nothing about the project. But where else, Mason wondered, could real milk have come from on the Moon?

The rotund cook said, "It's Representative Manners' private stock. I figured he could spare you a glassful or so. He must have brought five or ten gallons up from Earth with him."

Mason's jaw dropped. "He brought . . . five or ten . . . gallons . . . of milk?"

Firestone nodded amiably. "And, me knowing how much you went for the stuff, I figured I'd invite you in here for a little sip of it on the sly—"

"But why . . . why did he bring milk with him?"

"He's got stomach ulcers," the cook confided. "He's on a milk diet. Drinks quarts and quarts of the stuff every day, hardly eats anything else. It's a nuisance, I tell you, keeping that milk of his under refrigeration and dishing it out to him. But the commander says we gotta cater to those birds, and so I give 'em the best treatment. You ought to hear the rest of them grumble about the synthetic foods!"

Mason shrugged. "It's their own fault they have to eat synthetics up here," he said. "We eat ersatz because the budget doesn't allow for anything else."

"Yeah," Firestone said. "*You* try to tell them that!"

"Me?" Mason asked. He grinned broadly, making his face a little uglier, and finished off his milk. "I just work here, Rolly. I'm not looking for any trouble. Well, thanks for the milk, old man. I really appreciated the favor."

"Just don't tell anyone I let you have some."

"I'll keep mum," Mason promised. He saluted the cook grandiosely and left the kitchen to head for his own lab.

During the next couple of days, Mason and his buddies paid a few surreptitious visits to the Project Bossie lab, for maintenance purposes. One innovation was put into effect: the surplus growth from the liver tissue was no longer inhibited nor discarded, but now was carefully trimmed away and refrigerated. As Mason explained, it was perfectly edible meat, and there was no sense in letting it go to waste. As soon as the Washingtonites were gone, they would turn the meat supply over to Rolly Firestone with much fanfare. Some real meat would be a vast improvement over algae steaks.

Just before dinner call on the sixth day of the visit, Al Mason was on his way to quarters to wash up when Rolly Firestone intercepted him in the clearing.

"Al, can I talk with you for a minute?" the little cook whispered.

"Sure. What's up?"

"Remember the milk I gave you a couple of days ago? Representative Manners' milk?"

"Yeah," Mason said. "What about it?"

Firestone looked terrified. "You didn't tell anyone I let you have some, did you?"

"Of course not. You don't think I'd say anything that would get you in trouble, Rolly?"

Firestone said in a low voice, "If anyone ever finds out that I let you have Manners' milk, Al, I'll be drawn and quartered by Henderson. I mean it—drawn and quartered."

"Huh? What for?"

"Because," Firestone whispered, "I just had a peek in Manners' milk container. It's practically empty. All gone. Guzzled completely and utterly. Manners has enough left for tonight, but come breakfast-time there will be a rumpus."

"But he brought gallons, you said. How could he run out of milk?"

"He didn't keep track of how much he was drinking," said Firestone. "And who was I to tell him he was using it up too fast? Anyway, I wasn't paying attention. So he was ordering milk every time his stomach gave a twitch, five, six, seven times a day, and now there isn't any more."

Mason laughed. "I like that. The congressman who's so eager to cut everybody else's appropriation can't even budget his own milk supply!"

"It isn't funny, Al! Manners will raise the roof over it, and you can bet he isn't going to admit it's his own fault!"

"Have you told Henderson yet?"

"No. I'll let him know after dinner. But remember, not a word about the glass I slipped you, or I'm done! They'll accuse me of having given his milk to all the men!"

"Don't worry, Rolly. I'll stick by you." Mason chuckled happily. A

lovely idea was forming. He wondered if they could handle the job in time.

For the first time since the arrival of the Washington visitors, real work went on in Laboratory 106a after hours. The lab lights were on right through the night, as the members of Project Bossie labored fiercely to iron out the final bugs in their system.

Toward morning, the last hitches were straightened away. Mason and his cohorts stood back, proudly surveying the monstrous rube goldberg device that almost completely filled Laboratory 106a. A bale of waste paper—to supply cellulose in the absence of grass—stood stacked near the intake. A receptacle waited at the far end of the room. In between was a spiderweb of pistons and rods, pipes and tubes, stopcocks and flowmeters and vats of chemicals—with the two organic components of the device, the culture-grown liver and milk gland, occupying positions of prominence.

"O.K.," Mason said. "Let's try her out."

Maury Roberts and Nat Bryan stuffed the waste-paper bale onto the intake platform, while Sam Brewster's hand hovered over the electronic keyboard that controlled the entire operation. He thumbed a switch. The machine hummed. The bale of paper moved ponderously forward, into the jaws of the shredders.

From there the shredded cellulose proceeded to the first stomach to be mangled and pulped into a soggy semiliquid; then on to the second stomach for further breaking-down, then to the wringer in the third stomach, then to the fourth, where digestion proper could begin. Translucent feed lines spurted enzymes into the system at the properly programmed intervals. Counters clicked; gears meshed. The effect was imposing.

According to Mason's computations, the process, vastly accelerated over its natural counterpart, would take about three hours from waste-paper to milk. The time was 0540 hours when the first few drops of yield came filtering through the udder. At 0650, after Maury Roberts had run some quick chemical tests and after the yield had been refrigerated, the six bleary-eyed experimenters gravely toasted each other with milk that was milk to the last decimal point.

Shutting up shop, they left—five of them to try to catch some rest before the bonging of the reveille bell half an hour hence. But Al Mason had an errand to run. He stepped out into the cool breeze of the artificial morning and headed for Commander Henderson's office.

Henderson always rose at least an hour before reveille. Mason saw his office lights on. He opened the door and found himself staring at Major Chalmers, Henderson's aide-de-camp.

"Good morning, major," Mason said briskly.

"Morning, Mason."

"The commander busy?" Mason asked. "I'd like to talk to him for a minute, if I could."

"I'm afraid he *is* busy," Chalmers replied. "Maybe you'd better try later—around noon, maybe."

From within came a loud expostulatory outburst in Commander Henderson's voice. "I tell you, Donovan, I have to have milk for Manners! He's going to find out in half an hour that his supply is gone, and then he'll howl loud enough to be heard on Mars. No, I can't tell him that it's his own fault for drinking it up too fast! Would *you* tell a man like Manners something like that?"

Mason grinned at Major Chalmers. "What's all *that* about? Or is it classified?"

Chalmers said dourly, "Seems Representative Manners has ulcers, and he's on a milk diet. He brought his own milk supply along with him, but he didn't figure consumption right, and Rolly Firestone discoverd yesterday that the milk's all gone. Manners can't eat anything else, he refused to touch the powdered milk, and the C.O.'s been on the wire with Earth all night, trying to get them to O.K. a special shipment-rocket for Manners."

"But it would take four days for any rocket to get here," Mason said.

"You see the pickle we're in, Mason. So be a good fellow and go away, until—"

"No," Mason said. "Look, sir, could you get me in to see Commander Henderson right away?"

"Of course not. I told you, he's on the wire to Earth!"

"Who cares about that? Tell him I can get him milk. *Real* milk!"

"You—what? Listen, Mason, this is no time for funny business."

"I know," Mason said with thinly veiled impatience. "But I can supply milk. M—I—L—K. Will you tell the commander that?"

"Don't try to make fools out of us," Chalmers warned.

Mason uttered a brief cry of disgust and deftly side-stepped the startled Chalmers. He pushed his way into Commander Henderson's office. The C.O. was bent over his communication panel, speaking loudly into the mike, and he wore the look of a deeply worried man.

He looked up and barked, "Get out of here, Mason. I'm on the line to Earth!"

"I know, sir. You can hang up. I know what you're calling for. I just want to tell you that the synthesizer is working, sir. We have milk for Representative Manners!"

"*What?*" Henderson's eyes widened astonishingly. He muttered something into the microphone and broke the contact with a brusque gesture. "You mean that crackbrained scheme of yours actually worked? That thing in 106a gives *milk?*"

"Yes, sir. And liver, too. We got it working last night." Mason repressed a yawn of exhaustion. "If you like, sir, you can have some milk for Representative Manners."

In due time the congressional del-

egation departed, on the February ship from Earth. And the month sped by, until it was time for the March ship.

Commander Henderson sent for Mason after the cargo of the March ship had been unloaded.

"Good afternoon, sir," Mason said agreeably.

"Hello, Al. At ease. I want to read you something." The commander spread some microfilm transcripts out on his desk. "An excerpt from the *Congressional Record*. Listen: this is Representative Manners speaking.

"*'. . . I am deeply impressed with the resourcefulness and cleverness of the reserach scientists at Lunar Base Three. Compelled by the exigencies of nature to subsist on synthetic foods, they have shrewdly and economically devised means for creating virtual duplicates of certain Terran foods. My colleagues and I, after several days of subsistence on normal synthetic foods, were delighted one day to be greeted with milk and meat which seemed undeniably Terrestrial in origin—only to be shown, after the meal, how these commodities were produced, virtually magically, by means of a startling technique termed biochemical transmutation. Milk and meat created from waste paper! And at remarkably low cost! A triumphant example of Yankee ingenuity at its finest—'*"

Henderson paused and looked up. "Manners' style is on the flowery side, so I won't read any more."

"I guess we impressed him," Mason said.

"I guess so. Producing those quarts of milk really bowled them over—and saved Manners' face, too. And the liver made a real hit with them. We're getting ten million tacked onto our appropriation for '96-'97, thanks to that damfool thing of yours in Laboratory 106a."

"I'm glad to hear that, sir," Mason replied.

Henderson smiled. "I still haven't apologized for getting sore when you told me what the gadgetry was for."

"Apologies aren't necessary, sir."

Henderson shook his head. "They are, Al. You were having fun, and I roasted you for it—but I should have known that your kind of fun gets results. Now, thanks to your fun—which I should have known is the essence of fundamental research!—we've solved a major problem of life on the Moon. We have a meat-and-milk synthesizer. It's a little cumbersome, perhaps, but—"

"I was meaning to talk to you about that, sir. We . . . ah . . . have a new model in the works. It's a little more streamlined—a lot smaller, and a better yield. But it's going to need some tricky equipment, and the cost may run a little high, so—"

Henderson's eyes twinkled. He scribbled something on a piece of paper and handed it to Mason. "Here, Al. An authorization for unlimited research funds. You've got a blank check to have some more fun with. Go build us a better cow."

THE END

ACCIDENTAL DEATH

BY PETER BAILY

***The most** dangerous of weapons is the one you don't know is loaded.*

Illustrated by Schoenherr

THE wind howled out of the northwest, blind with snow and barbed with ice crystals. All the way up the half-mile precipice it fingered and wrenched away at groaning ice-slabs. It screamed over the top, whirled snow in a dervish dance around the hollow there, piled snow into the long furrow plowed ruler-straight through streamlined hummocks of snow.

The sun glinted on black rock glazed by ice, chasms and ridges and bridges of ice. It lit the snow slope to a frozen glare, penciled black shadow down the long furrow, and flashed at the furrow's end on a thing of metal and plastics, an artifact thrown down in the dead wilderness.

Nothing grew, nothing flew, nothing walked, nothing talked. But the thing in the hollow was stirring in stiff jerks like a snake with its back broken or a clockwork toy running down. When the movements stopped, there was a click and a strange sound began. Thin, scratchy, inaudible more than a yard away, weary but still cocky, there leaked from the shape in the hollow the sound of a human voice.

"I've tried my hands and arms and they seem to work," it began. "I've wiggled my toes with entire success. It's well on the cards that I'm all in one piece and not broken up at all, though I don't see how it could happen. Right now I don't feel like struggling up and finding out. I'm fine where I am. I'll just lie

here for a while and relax, and get some of the story on tape. This suit's got a built-in recorder, I might as well use it. That way even if I'm not as well as I feel, I'll leave a message. You probably know we're back and wonder what went wrong.

"I suppose I'm in a state of shock. That's why I can't seem to get up. Who wouldn't be shocked after luck like that?

"I've always been lucky, I guess. Luck got me a place in the *Whale*. Sure I'm a good astronomer but so are lots of other guys. If I were ten years older, it would have been an honor, being picked for the first long jump in the first starship ever. At my age it was luck.

"You'll want to know if the ship worked. Well, she did. Went like a bomb. We got lined up between Earth and Mars, you'll remember, and James pushed the button marked 'Jump'. Took his finger off the button and there we were: *Alpha Centauri*. Two months later your time, one second later by us. We covered our whole survey assignment like that, smooth as a pint of old and mild which right now I could certainly use. Better yet would be a pint of hot black coffee with sugar in. Failing that, I could even go for a long drink of cold water. There was never anything wrong with the *Whale* till right at the end and even then I doubt if it was the ship itself that fouled things up.

"That was some survey assignment. We astronomers really lived. Wait till you see—but of course you won't. I could weep when I think of those miles of lovely color film, all gone up in smoke.

"I'm shocked all right. I never said who I was. Matt Hennessy, from Farside Observatory, back of the Moon, just back from a proving flight *cum* astronomical survey in the starship *Whale*. Whoever you are who finds this tape, you're made. Take it to any radio station or newspaper office. You'll find you can name your price and don't take any wooden nickels.

"Where had I got to? I'd told you how we happened to find Chang, hadn't I? That's what the natives called it. Walking, talking natives on a blue sky planet with 1.1 g gravity and a twenty per cent oxygen atmosphere at fifteen p.s.i. The odds against finding Chang on a six-sun survey on the first star jump ever must be up in the googols. We certainly were lucky.

"The Chang natives aren't very technical—haven't got space travel for instance. They're good astronomers, though. We were able to show them our sun, in their telescopes. In their way, they're a highly civilized people. Look more like cats than people, but they're people all right. If you doubt it, chew these facts over.

"One, they learned our language in four weeks. When I say they, I mean a ten-man team of them.

"Two, they brew a near-beer that's a lot nearer than the canned stuff we had aboard the *Whale*.

"Three, they've a great sense of

humor. Ran rather to silly practical jokes, but still. Can't say I care for that hot-foot and belly-laugh stuff myself, but tastes differ.

"Four, the ten-man language team also learned chess and table tennis.

"But why go on? People who talk English, drink beer, like jokes and beat me at chess or table-tennis are people for my money, even if they look like tigers in trousers.

"It was funny the way they won all the time at table tennis. They certainly weren't so hot at it. Maybe that ten per cent extra gravity put us off our strokes. As for chess, Svendlov was our champion. He won sometimes. The rest of us seemed to lose whichever Chingsi we played. There again it wasn't so much that they were good. How could they be, in the time? It was more that we all seemed to make silly mistakes when we played them and that's fatal in chess. Of course it's a screwy situation, playing chess with something that grows its own fur coat, has yellow eyes an inch and a half long and long white whiskers. Could *you* have kept your mind on the game?

"And don't think I fell victim to their feline charm. The children were pets, but you didn't feel like patting the adults on their big grinning heads. Personally I didn't like the one I knew best. He was called—well, we called him Charley, and he was the ethnologist, ambassador, contact man, or whatever you like to call him, who came back with us. Why I disliked him was because he was always trying to get the edge on you. All the time he had to be top. Great sense of humor, of course. I nearly broke my neck on that butter-slide he fixed up in the metal alleyway to the *Whale's* engine room. Charley laughed fit to bust, everyone laughed, I even laughed myself though doing it hurt me more than the tumble had. Yes, life and soul of the party, old Charley . . .

"My last sight of the *Minnow* was a cabin full of dead and dying men, the sweetish stink of burned flesh and the choking reek of scorching insulation, the boat jolting and shuddering and beginning to break up, and in the middle of the flames, still unhurt, was Charley. He was laughing . . .

"My God, it's dark out here. Wonder how high I am. Must be all of fifty miles, and doing eight hundred miles an hour at least. I'll be doing more than that when I land. What's final velocity for a fifty-mile fall? Same as a fifty thousand mile fall, I suppose; same as escape; twenty-four thousand miles an hour. I'll make a mess . . .

"That's better. Why didn't I close my eyes before? Those star streaks made me dizzy. I'll make a nice shooting star when I hit air. Come to think of it, I must be deep in air now. Let's take a look.

"It's getting lighter. Look at those peaks down there! Like great knives. I don't seem to be falling as fast as I expected though. Almost seem to be floating. Let's switch on the radio and tell the world hello. Hello, earth

. . . hello, again . . . and good-by . . .

"Sorry about that. I passed out. I don't know what I said, if anything, and the suit recorder has no playback or eraser. What must have happened is that the suit ran out of oxygen, and I lost consciousness due to anoxia. I dreamed I switched on the radio, but I actually switched on the emergency tank, thank the Lord, and that brought me round.

"Come to think of it, why not crack the suit and breath fresh air instead of bottled?

"No. I'd have to get up to do that. I think I'll just lie here a little bit longer and get properly rested up before I try anything big like standing up.

"I was telling about the return journey, wasn't I? The long jump back home, which should have dumped us between the orbits of Earth and Mars. Instead of which, when James took his finger off the button, the mass-detector showed nothing except the noise-level of the universe.

"We were out in that no place for a day. We astronomers had to establish our exact position relative to the solar system. The crew had to find out exactly what went wrong. The physicists had to make mystic passes in front of meters and mutter about residual folds in stress-free space. Our task was easy, because we were about half a light-year from the sun. The crew's job was also easy: they found what went wrong in less than half an hour.

"It still seems incredible. To program the ship for a star-jump, you merely told it where you were and where you wanted to go. In practical terms, that entailed first a series of exact measurements which had to be translated into the somewhat abstruse co-ordinate system we used based on the topological order of mass-points in the galaxy. Then you cut a tape on the computer and hit the button. Nothing was wrong with the computer. Nothing was wrong with the engines. We'd hit the right button and we'd gone to the place we'd aimed for. All we'd done was aim for the wrong place. It hurts me to tell you this and I'm just attached personnel with no space-flight tradition. In practical terms, one highly trained crew member had punched a wrong pattern of holes on the tape. Another equally skilled had failed to notice this when reading back. A childish error, highly improbable; twice repeated, thus squaring the improbability. Incredible, but that's what happened.

"Anyway, we took good care with the next lot of measurements. That's why we were out there so long. They were cross-checked about five times. I got sick so I climbed into a spacesuit and went outside and took some photographs of the Sun which I hoped would help to determine hydrogen density in the outer regions. When I got back everything was ready. We disposed ourselves about the control room and relaxed for all we were worth. We were all praying that this time nothing would go wrong, and all looking forward to seeing Earth again after four months subjective

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time away, except for Charley, who was still chuckling and shaking his head, and Captain James who was glaring at Charley and obviously wishing human dignity permitted him to tear Charley limb from limb. Then James pressed the button.

"Everything twanged like a bowstring. I felt myself turned inside out, passed through a small sieve, and poured back into shape. The entire bow wall-screen was full of Earth. Something was wrong all right, and this time it was much, much worse. We'd come out of the jump about two hundred miles above the Pacific, pointed straight down, traveling at a relative speed of about two thousand miles an hour.

"It was a fantastic situation. Here was the *Whale,* the most powerful ship ever built, which could cover fifty light-years in a subjective time of one second, and it was helpless. For, as of course you know, the star-drive couldn't be used again for at least two hours.

"The *Whale* also had ion rockets of course, the standard deuterium-fusion thing with direct conversion. As again you know, this is good for interplanetary flight because you can run it continuously and it has extremely high exhaust velocity. But in our situation it was no good because it has rather a low thrust. It would have taken more time than we had to deflect us enough to avoid a smash. We had five minutes to abandon ship.

"James got us all into the *Minnow* at a dead run. There was no time to take anything at all except the clothes we stood in. The *Minnow* was meant for short heavy hops to planets or asteroids. In addition to the ion drive it had emergency atomic rockets, using steam for reaction mass. We thanked God for that when Cazamian canceled our downwards velocity with them in a few seconds. We curved away up over China and from about fifty miles high we saw the *Whale* hit the Pacific. Six hundred tons of mass at well over two thousand miles an hour make an almighty splash. By now you'll have divers down, but I doubt they'll salvage much you can use.

"I wonder why James went down with the ship, as the saying is? Not that it made any difference. It must have broken his heart to know that his lovely ship was getting the chopper. Or did he suspect another human error?

"We didn't have time to think about that, or even to get the radio working. The steam rockets blew up. Poor Cazamian was burnt to a crisp. Only thing that saved me was the spacesuit I was still wearing. I snapped the face plate down because the cabin was filling with fumes. I saw Charley coming out of the toilet —that's how he'd escaped—and I saw him beginning to laugh. Then the port side collapsed and I fell out.

"I saw the launch spinning away, glowing red against a purplish black sky. I tumbled head over heels towards the huge curved shield of earth fifty miles below. I shut my eyes and that's about all I remember.

I don't see how any of us could have survived. I think we're all dead.

"I'll have to get up and crack this suit and let some air in. But I can't. I fell fifty miles without a parachute. I'm dead so I can't stand up."

There was silence for a while except for the vicious howl of the wind. Then snow began to shift on the ledge. A man crawled stiffly out and came shakily to his feet. He moved slowly around for some time. After about two hours he returned to the hollow, squatted down and switched on the recorder. The voice began again, considerably wearier.

"Hello there. I'm in the bleakest wilderness I've ever seen. This place makes the moon look cozy. There's precipice around me every way but one and that's up. So it's up I'll have to go till I find a way to go down. I've been chewing snow to quench my thirst but I could eat a horse. I picked up a short-wave broadcast on my suit but couldn't understand a word. Not English, not French, and there I stick. Listened to it for fifteen minutes just to hear a human voice again. I haven't much hope of reaching anyone with my five milliwatt suit transmitter but I'll keep trying.

"Just before I start the climb there are two things I want to get on tape. The first is how I got here. I've remembered something from my military training, when I did some parachute jumps. Terminal velocity for a human body falling through air is about one hundred twenty m.p.h. Falling fifty miles is no worse than falling five hundred feet. You'd be lucky to live through a five hundred foot fall, true, but I've been lucky. The suit is bulky but light and probably slowed my fall. I hit a sixty mile an hour updraft this side of the mountain, skidded downhill through about half a mile of snow and fetched up in a drift. The suit is part worn but still operational. I'm fine.

"The second thing I want to say is about the Chingsi, and here it is: watch out for them. Those jokers are dangerous. I'm not telling how because I've got a scientific reputation to watch. You'll have to figure it out for yourselves. Here are the clues:

(1) The Chingsi talk and laugh but after all they aren't human. On an alien world a hundred light-years away, why shouldn't alien talents develop? A talent that's so uncertain and rudimentary here that most people don't believe it, might be highly developed out there.

(2) The *Whale* expedition did fine till it found Chang. Then it hit a seam of bad luck. Real stinking bad luck that went on and on till it looks fishy. We lost the ship, we lost the launch, all but one of us lost our lives. We couldn't even win a game of ping-pong.

"So what is luck, good or bad? Scientifically speaking, future chance events are by definition chance. They can turn out favorable or not. When a preponderance of chance events has

occurred unfavorably, you've got bad luck. It's a fancy name for a lot of chance results that didn't go your way. But the gambler defines it differently. For him, luck refers to the future, and you've got bad luck when future chance events won't go your way. Scientific investigations into this have been inconclusive, but everyone knows that some people are lucky and others aren't. All we've got are hints and glimmers, the fumbling touch of a rudimentary talent. There's the evil eye legend and the Jonah, bad luck bringers. Superstition? Maybe; but ask the insurance companies about accident prones. What's in a name? Call a man unlucky and you're superstitious. Call him accident prone and that's sound business sense. I've said enough.

"All the same, search the spaceflight records, talk to the actuaries. When a ship is working perfectly and is operated by a hand-picked crew of highly trained men in perfect condition, how often is it wrecked by a series of silly errors happening one after another in defiance of probability?

"I'll sign off with two thoughts, one depressing and one cheering. A single Chingsi wrecked our ship and our launch. What could a whole planetful of them do?

"On the other hand, a talent that manipulates chance events is bound to be chancy. No matter how highly developed it can't be surefire. The proof is that I've survived to tell the tale."

At twenty below zero and fifty miles an hour the wind ravaged the mountain. Peering through his polarized vizor at the white waste and the snow-filled air howling over it, sliding and stumbling with every step on a slope that got gradually steeper and seemed to go on forever, Matt Hennessy began to inch his way up the north face of Mount Everest.

THE END

THE ANALYTICAL LABORATORY

(*Continued from page* 68)

I'm pretty sure that both "Queen Bee," "Ministry of Disturbance" and "Triggerman" were genuinely strong stories—and "Bicycle" came in strong.

But a question remains; do you readers feel that humor—which is definitely rare and hard to achieve in good science-fiction; you should try it some time if you think not!—has no place in this field? Or is it a matter of "Bicycle" being one of those pieces that simply *has* to get rolling before the effect takes hold?

Is humor wanted or not? Votes, please!

THE EDITOR.

MISSING

LINK

BY FRANK HERBERT

The Romantics used to say that the eyes were the windows of the Soul. A good Alien Xenologist might not put it quite so poetically . . . but he can, if he's sharp, read a lot in the look of an eye!

Illustrated by van Dongen

E OUGHT to scrape this planet clean of every living thing on it," muttered Umbo Stetson, section chief of Investigation & Adjustment.

Stetson paced the landing control bridge of his scout cruiser. His footsteps grated on a floor that was the rear wall of the bridge during flight. But now the ship rested on its tail fins—all four hundred glistening red and black meters of it. The open ports of the bridge looked out on the jungle roof of Gienah III some one hundred fifty meters below. A butter yellow sun hung above the horizon, perhaps an hour from setting.

"Clean as an egg!" he barked. He paused in his round of the bridge, glared out the starboard port, spat into the fire-blackened circle that the cruiser's jets had burned from the jungle.

The I-A section chief was dark-haired, gangling, with large head and big features. He stood in his customary slouch, a stance not improved by sacklike patched blue fatigues. Although on this present operation he rated the flag of a division admiral, his fatigues carried no insignia. There was a general unkempt, straggling look about him.

Lewis Orne, junior I-A field man with a maiden diploma, stood at the opposite port, studying the jungle horizon. Now and then he glanced at the bridge control console, the chronometer above it, the big translite map of their position tilted from

the opposite bulkhead. A heavy planet native, he felt vaguely uneasy on this Gienah III with its gravity of only seven-eighths Terran Standard. The surgical scars on his neck where the micro-communications equipment had been inserted itched maddeningly. He scratched.

"Hah!" said Stetson. "Politicians!"

A thin black insect with shell-like wings flew in Orne's port, settled in his close-cropped red hair. Orne pulled the insect gently from his hair, released it. Again it tried to land in his hair. He ducked. It flew across the bridge, out the port beside Stetson.

There was a thick-muscled, no-fat look to Orne, but something about his blocky, off-center features suggested a clown.

"I'm getting tired of waiting," he said.

"*You're* tired! Hah!"

A breeze rippled the tops of the green ocean below them. Here and there, red and purple flowers jutted from the verdure, bending and nodding like an attentive audience.

"Just look at that blasted jungle!" barked Stetson. "Them and their stupid orders!"

A call bell tinkled on the bridge control console. The red light above the speaker grid began blinking. Stetson shot an angry glance at it. "Yeah, Hal?"

"O.K., Stet. Orders just came through. We use Plan C. ComGO says to brief the field man, and jet out of here."

"Did you ask them about using another field man?"

Orne looked up attentively.

The speaker said: "Yes. They said we have to use Orne because of the records on the *Delphinus*."

"Well then, will they give us more time to brief him?"

"Negative. It's crash priority. ComGo expects to blast the planet anyway."

Stetson glared at the grid. "Those fat-headed, lard-bottomed, pig-brained . . . POLITICIANS!" He took two deep breaths, subsided. "O.K. Tell them we'll comply."

"One more thing, Stet."

"What now?"

"I've got a confirmed contact."

Instantly, Stetson was poised on the balls of his feet, alert. "Where?"

"About ten kilometers out. Section AAB-6."

"How many?"

"A mob. You want I should count them?"

"No. What're they doing?"

"Making a beeline for us. You better get a move on."

"O.K. Keep us posted."

"Right."

Stetson looked across at his junior field man. "Orne, if you decide you want out of this assignment, you just say the word. I'll back you to the hilt."

"Why should I want out of my first field assignment?"

"Listen, and find out." Stetson crossed to a tilt-locker behind the big translite map, hauled out a white

coverall uniform with gold insignia, tossed it to Orne. "Get into these while I brief you on the map."

"But this is an R&R uni—" began Orne.

"Get that uniform on your ugly frame!"

"Yes, sir, Admiral Stetson, sir. Right away, sir. But I thought I was through with old Rediscovery & Re-education when you drafted me off of Hamal into the I-A . . . sir." He began changing from the I-A blue to the R&R white. Almost as an afterthought, he said: ". . . Sir."

A wolfish grin cracked Stetson's big features. "I'm soooooo happy you have the proper attitude of subservience toward authority."

Orne zipped up the coverall uniform. "Oh, yes, sir . . . sir."

"O.K., Orne, pay attention." Stetson gestured at the map with its green superimposed grid squares. "Here we are. Here's that city we flew over on our way down. You'll head for it as soon as we drop you. The place is big enough that if you hold a course roughly northeast you can't miss it. We're—"

Again the call bell rang.

"What is it this time, Hal?" barked Stetson.

"They've changed to Plan H, Stet. New orders cut."

"Five days?"

"That's all they can give us. ComGO says he can't keep the information out of High Commissioner Bullone's hands any longer than that."

"It's five days for sure then."

"Is this the usual R&R foul-up?" asked Orne.

Stetson nodded. "Thanks to Bullone and company! We're just one jump ahead of catastrophe, but they still pump the bushwah into the Rah & Rah boys back at dear old Uni-Galacta!"

"You're making light of my revered alma mater," said Orne. He struck a pose. "We must reunite the lost planets with our centers of culture and industry, and take up the *glor*-ious onward march of mankind that was so *bru*-tally—"

"Can it!" snapped Stetson. "We both know we're going to rediscover one planet too many some day. Rim War all over again. But this is a different breed of fish. It's not, repeat, *not* a *re*-discovery."

Orne sobered. "Alien?"

"Yes. A-L-I-E-N! A never-before-contacted culture. That language you were force fed on the way over, that's an alien language. It's not complete . . . all we have off the *minis*. And we excluded data on the natives because we've been hoping to dump this project and nobody the wiser."

"Holy mazoo!"

"Twenty-six days ago an I-A search ship came through here, had a routine mini-sneaker look at the place. When he combed in his net of snakers to check the tapes and films, lo and behold, he had a little stranger."

"One of *theirs?*"

"No. It was a *mini* off the *Delphinus Rediscovery*. The *Delphinus* has

been unreported for eighteen standard months!"

"Did it crack up here?"

"We don't know. If it did, we haven't been able to spot it. She was supposed to be way off in the Balandine System by now. But we've something else on our minds. It's the one item that makes me want to blot out this place, and run home with my tail between my legs. We've a—"

Again the call bell chimed.

"NOW WHAT?" roared Stetson into the speaker.

"I've got a *mini* over that mob, Stet. They're talking about us. It's a definite raiding party."

"What armament?"

"Too gloomy in that jungle to be sure. The infra beam's out on this *mini*. Looks like hard pellet rifles of some kind. Might even be off the *Delphinus*."

"Can't you get closer?"

"Wouldn't do any good. No light down there, and they're moving up fast."

"Keep an eye on them, but don't ignore the other sectors," said Stetson.

"You think I was born yesterday?" barked the voice from the grid. The contact broke off with an angry sound.

"One thing I like about the I-A," said Stetson. "It collects such even-tempered types." He looked at the white uniform on Orne, wiped a hand across his mouth as though he'd tasted something dirty.

"Why *am* I wearing this thing?" asked Orne.

"Disguise."

"But there's no mustache!"

Stetson smiled without humor. "That's one of I-A's answers to those fat-keistered politicians. We're setting up our own search system to find the planets before *they* do. We've managed to put spies in key places at R&R. Any touchy planets our spies report, we divert the files."

"Then what?"

"Then we look into them with bright boys like you—disguised as R&R field men."

"Goody, goody. And what happens if R&R stumbles onto me while I'm down there playing patty cake?"

"We disown you."

"But you said an I-A ship found this joint."

"It did. And then one of our spies in R&R intercepted a *routine* request for an agent-instructor to be assigned here with full equipment. Request signed by a First-Contact officer name of Diston . . . of the *Delphinus!*"

"But the Del—"

"Yeah. Missing. The request was a forgery. Now you see why I'm mostly for rubbing out this place. Who'd dare forge such a thing unless he knew for sure that the original FC officer was missing . . . or dead?"

"What the jumped up mazoo are we doing here, Stet?" asked Orne. "Alien calls for a full contact team with all of the—"

"It calls for one planet-buster bomb . . . buster—in five days. Unless you give them a white bill in the meantime. High Commissioner Bullone will have word of this planet by then. If Gienah III still exists in five days, can't you imagine the fun the politicians'll have with it? Mama mia! We want this planet cleared for contact or dead before then."

"I don't like this, Stet."

"YOU don't like it!"

"Look," said Orne. "There must be another way. Why . . . when we teamed up with the Alerinoids we gained five hundred years in the physical sciences alone, not to mention the—"

"The Alerinoids didn't knock over one of our survey ships first."

"What if the *Delphinus* just crashed here . . . and the locals picked up the pieces?"

"That's what you're going in to find out, Orne. But answer me this: If they *do* have the *Delphinus,* how long before a tool-using race could be a threat to the galaxy?"

"I saw that city they built, Stet. They could be dug in within six months, and there'd be no—"

"Yeah."

Orne shook his head. "But think of it: Two civilizations that matured along different lines! Think of all the different ways we'd approach the same problems . . . the lever that'd give us for—"

"You sound like a Uni-Galacta lecture! Are you through marching arm in arm into the misty future?"

Orne took a deep breath. "Why's a freshman like me being tossed into this dish?"

"You'd still be on the *Delphinus* master lists as an R&R field man. That's important if you're masquerading."

"Am I the only one? I know I'm a recent *convert,* but—"

"You want out?"

"I didn't say that. I just want to know why I'm—"

"Because the bigdomes fed a set of requirements into one of their iron monsters. Your card popped out. They were looking for somebody capable, dependable . . . and . . . *expendable!*"

"Hey!"

"That's why I'm down here briefing you instead of sitting back on a flagship. *I* got you into the I-A. Now, you listen carefully: If you push the panic button on this one without cause, I will personally flay you alive. We both know the advantages of an alien contact. But if you get into a hot spot, and call for help, I'll dive this cruiser into that city to get you out!"

"Orne swallowed. "Thanks, Stet. I'm—"

"We're going to take up a tight orbit. Out beyond us will be five transports full of I-A marines and a Class IX Monitor with one planet-buster. You're calling the shots, God help you! First, we want to know if they have the *Delphinus* . . . and if so, where it is. Next, we want to know just how warlike these goons

are. Can we control them if they're bloodthirsty. What's their potential?"

"In five days?"

"Not a second more."

"What do we know about them?"

"Not much. They look something like an ancient Terran chimpanzee . . . only with blue fur. Face is hairless, pink-skinned." Stetson snapped a switch. The translite map became a screen with a figure frozen on it. "Like that. This is life size."

"Looks like the missing link they're always hunting for," said Orne. "Yeah, but you've got a different kind of a missing link."

"Vertical-slit pupils in their eyes," said Orne. He studied the figure. It had been caught from the front by a mini-sneaker camera. About five feet tall. The stance was slightly bent forward, long arms. Two vertical nose slits. A flat, lipless mouth. Receding chin. Four-fingered hands. It wore a wide belt from which dangled neat pouches and what looked like tools, although their use was obscure. There appeared to be the tip of a tail protruding from behind one of the squat legs. Behind the creature towered the faery spires of the city they'd observed from the air.

"Tails?" asked Orne.

"Yeah. They're arboreal. Not a road on the whole planet that we can find. But there are lots of vine lanes through the jungles." Stetson's face hardened. "Match *that* with a city as advanced as that one."

"Slave culture?"

"Probably."

"How many cities have they?"

"We've found two. This one and another on the other side of the planet. But the other one's a ruin."

"A ruin? Why?"

"You tell us. Lots of mysteries here."

"What's the planet like?"

"Mostly jungle. There are polar oceans, lakes and rivers. One low mountain chain follows the equatorial belt about two thirds around the planet."

"But only two cities. Are you sure?"

"Reasonably so. It'd be pretty hard to miss something the size of that thing we flew over. It must be fifty kilometers long and at least ten wide. Swarming with these creatures, too. We've got a zone-count estimate that places the city's population at over thirty million."

"Whee-ew! Those are tall buildings, too."

"We don't know much about this place, Orne. And unless you bring them into the fold, there'll be nothing but ashes for our archaeologists to pick over."

"Seems a dirty shame."

"I agree, but—"

The call bell jangled.

Stetson's voice sounded tired: "Yeah, Hal?"

"That mob's only about five kilometers out, Stet. We've got Orne's gear outside in the disguised air sled."

"We'll be right down."

"Why a disguised sled?" asked Orne.

"If they think it's a ground buggy, they might get careless when you most need an advantage. We could always scoop you out of the air, you know."

"What're my chances on this one, Stet?"

Stetson shrugged. "I'm afraid they're slim. These goons probably have the *Delphinus,* and they want you just long enough to get your equipment and everything you know."

"Rough as that, eh?"

"According to our best guess. If you're not out in five days, we blast."

Orne cleared his throat.

"Want out?" asked Stetson.

"No."

"Use the *back-door* rule, son. Always leave yourself a way out. Now . . . let's check that equipment the surgeons put in your neck." Stetson put a hand to his throat. His mouth remained closed, but there was a surf-hissing voice in Orne's ears: "You read me?"

"Sure. I can—"

"No!" hissed the voice. "Touch the mike contact. Keep your mouth closed. Just use your speaking muscles without speaking."

Orne obeyed.

"O.K.," said Stetson. "You come in loud and clear."

"I ought to. I'm right on top of you!"

"There'll be a relay ship over you all the time," said Stetson. "Now . . . when you're not touching that mike contact this rig'll still feed us what you say . . . and everything that goes on around you, too. We'll monitor everything. Got that?"

"Yes."

Stetson held out his right hand. "Good luck. I meant that about diving in for you. Just say the word."

"I know the word, too," said Orne. "HELP!"

Gray mud floor and gloomy aisles between monstrous bluish tree trunks—that was the jungle. Only the barest weak glimmering of sunlight penetrated to the mud. The disguised sled—its para-grav units turned off—lurched and skidded around buttress roots. Its headlights swung in wild arcs across the trunks and down to the mud. Aerial creepers—great looping vines of them—swung down from the towering forest ceiling. A steady drip of condensation spattered the windshield, forcing Orne to use the wipers.

In the bucket seat of the sled's cab, Orne fought the controls. He was plagued by the vague slow-motion-floating sensation that a heavy planet native always feels in lighter gravity. It gave him an unhappy stomach.

Things skipped through the air around the lurching vehicle: flitting and darting things. Insects came in twin cones, siphoned toward the headlights. There was an endless chittering whistling tok-tok-toking in the gloom beyond the lights.

Stetson's voice hissed suddenly

through the surgically implanted speaker: "How's it look?"

"Alien."

"Any sign of that mob?"

"Negative."

"O.K. We're taking off."

Behind Orne, there came a deep rumbling roar that receded as the scout cruiser climbed its jets. All other sounds hung suspended in after-silence, then resumed: the strongest first and then the weakest.

A heavy object suddenly arced through the headlights, swinging on a vine. It disappeared behind a tree. Another. Another. Ghostly shadows with vine pendulums on both sides. Something banged down heavily onto the hood of the sled.

Orne braked to a creaking stop that shifted the load behind him, found himself staring through the windshield at a native of Gienah III. The native crouched on the hood, a Mark XX exploding-pellet rifle in his right hand directed at Orne's head. In the abrupt shock of meeting, Orne recognized the weapon: standard issue to the marine guards on all R&R survey ships.

The native appeared the twin of the one Orne had seen on the translite screen. The four-fingered hand looked extremely capable around the stock of the Mark XX.

Slowly, Orne put a hand to his throat, pressed the contact button. He moved his speaking muscles: *"Just made contact with the mob. One on the hood now has one of our Mark XX rifles aimed at my head."*

The surf-hissing of Stetson's voice came through the hidden speaker: *"Want us to come back?"*

"Negative. Stand by. He looks cautious rather than hostile."

Orne held up his right hand, palm out. He had a second thought: held up his left hand, too. Universal symbol of peaceful intentions: empty hands. The gun muzzle lowered slightly. Orne called into his mind the language that had been hypnoforced into him. *Ocheero? No. That means 'The People.' Ah . . .* And he had the heavy fricative greeting sound.

"Ffroiragrazzi," he said.

The native shifted to the left, answered in pure, unaccented High Galactese: "Who are you?"

Orne fought down a sudden panic. The lipless mouth had looked so odd forming the familiar words.

Stetson's voice hissed: *"Is that the native speaking Galactese?"*

Orne touched his throat. *"You heard him."*

He dropped his hand, said: "I am Lewis Orne of Rediscovery and Re-

Orne saw more shadows dropping to the mud around him. The sled shifted as someone climbed onto the load behind the cab. The someone scuttled agilely for a moment.

The native climbed down to the cab's side step, opened the door. The rifle was held at the ready. Again, the lipless mouth formed Galactese

education. I was sent here at the request of the First-Contact officer on the *Delphinus Rediscovery.*"

"Where is your ship?" demanded the Gienahn.

"It put me down and left."

"Why?"

"It was behind schedule for another appointment."

Out of the corners of his eyes,

words: "What do you carry in this . . . vehicle?"

"The equipment every R&R field man uses to help the people of a rediscovered planet improve themselves." Orne nodded at the rifle. "Would you mind pointing that weapon some other direction? It makes me nervous."

The gun muzzle remained unwaveringly on Orne's middle. The

native's mouth opened, revealing long canines. "Do we not look strange to you?"

"I take it there's been a heavy mutational variation in the humanoid norm on this planet," said Orne. "What is it? Hard radiation?"

No answer.

"It doesn't really make any difference, of course," said Orne. "I'm here to help you."

"I am Tanub, High Path Chief of the Grazzi," said the native. "I decide who is to help."

Orne swallowed.

"Where do you go?" demanded Tanub.

"I was hoping to go to your city. Is it permitted?"

A long pause while the vertical-slit pupils of Tanub's eyes expanded and contracted. "It is permitted."

Stetson's voice came through the hidden speaker: *"All bets off. We're coming in after you. That Mark XX is the final straw. It means they have the* Delphinus *for sure!"*

Orne touched his throat. *"No! Give me a little more time!"*

"Why?"

"I have a hunch about these creatures."

"What is it?"

"No time now. Trust me."

Another long pause in which Orne and Tanub continued to study each other. Presently, Stetson said: *"O.K. Go ahead as planned. But find out where the* Delphinus *is! If we get that back we pull their teeth."*

"Why do you keep touching your throat?" demanded Tanub.

"I'm nervous," said Orne. "Guns always make me nervous."

The muzzle lowered slightly.

"Shall we continue on to your city?" asked Orne. He wet his lips with his tongue. The cab light on Tanub's face was giving the Gienahn an eerie sinister look.

"We can go soon," said Tanub.

"Will you join me inside here?" asked Orne. "There's a passenger seat right behind me."

Tanub's eyes moved catlike: right, left. "Yes." He turned, barked an order into the jungle gloom, then climbed in behind Orne.

"When do we go?" asked Orne.

"The great sun will be down soon," said Tanub. "We can continue as soon as Chiranachuruso rises."

"Chiranachuruso?"

"Our satellite . . . our moon," said Tanub.

"It's a beautiful word," said Orne. "Chiranachuruso."

"In our tongue it means: The Limb of Victory," said Tanub. "By its light we will continue."

Orne turned, looked back at Tanub. "Do you mean to tell me that you can see by what light gets down here through those trees?"

"Can you not see?" asked Tanub.

"Not without the headlights."

"Our eyes differ," said Tanub. He bent toward Orne, peered. The vertical slit pupils of his eyes expanded, contracted. "You are the same as the . . . others."

"Oh, on the *Delphinus*?"

Pause. "Yes."

Presently, a greater gloom came over the jungle, bringing a sudden stillness to the wild life. There was a chittering commotion from the natives in the trees around the sled. Tanub shifted behind Orne.

"We may go now," he said. "Slowly . . . to stay behind my . . . scouts."

"Right." Orne eased the sled forward around an obstructing root.

Silence while they crawled ahead. Around them shapes flung themselves from vine to vine.

"I admired your city from the air," said Orne. "It is very beautiful."

"Yes," said Tanub. "Why did you land so far from it?"

"We didn't want to come down where we might destroy anything."

"There is nothing to destroy in the jungle," said Tanub.

"Why do you have such a big city?" asked Orne.

Silence.

"I said: Why do you—"

"You are ignorant of our ways," said Tanub. "Therefore, I forgive you. The city is for our race. We must breed and be born in sunlight. Once—long ago—we used crude platforms on the tops of the trees. Now . . . only the . . . wild ones do this."

Stetson's voice hissed in Orne's ears: *"Easy on the sex line, boy. That's always touchy. These creatures are oviparous. Sex glands are apparently hidden in that long fur behind where their chins ought to be."*

"Who controls the breeding sites controls our world," said Tanub. "Once there was another city. We destroyed it."

"Are there many . . . wild ones?" asked Orne.

"Fewer each year," said Tanub.

"There's how they get their slaves," hissed Stetson.

"You speak excellent Galactese," said Orne.

"The High Path Chief commanded the best teacher," said Tanub. "Do you, too, know many things, Orne?"

"That's why I was sent here," said Orne.

"Are there many planets to teach?" asked Tanub.

"Very many," said Orne. "Your city—I saw very tall buildings. Of what do you build them?"

"In your tongue—glass," said Tanub. "The engineers of the *Delphinus* said it was impossible. As you saw—they are wrong."

"A glass-blowing culture, hissed Stetson. *"That'd explain a lot of things."*

Slowly, the disguised sled crept through the jungle. Once, a scout swooped down into the headlights, waved. Orne stopped on Tanub's order, and they waited almost ten minutes before proceeding.

"Wild ones?" asked Orne.

"Perhaps," said Tanub.

A glowing of many lights grew visible through the giant tree trunks. It grew brighter as the sled crept

through the last of the jungle, emerged in cleared land at the edge of the city.

Orne stared upward in awe. The city fluted and spiraled into the moonlit sky. It was a fragile appearing lacery of bridges, winking dots of light. The bridges wove back and forth from building to building until the entire visible network appeared one gigantic dew-glittering web.

"All that with glass," murmured Orne.

"What's happening?" hissed Stetson.

Orne touched his throat contact. *"We're just into the city clearing, proceeding toward the nearest building."*

"This is far enough," said Tanub.

Orne stopped the sled. In the moonlight, he could see armed Gienahns all around. The buttressed pedestal of one of the buildings loomed directly ahead. It looked taller than had the scout cruiser in its jungle landing circle.

Tanub leaned close to Orne's shoulder. "We have not deceived you, have we, Orne?"

"Huh? What do you mean?"

"You have recognized that we are not mutated members of your race."

Orne swallowed. Into his ears came Stetson's voice: *"Better admit it."*

"That's true," said Orne.

"I like you, Orne," said Tanub. "You shall be one of my slaves. You will teach me many things."

"How did you capture the *Delphinus?"* asked Orne.

"You know that, too?"

"You have one of their rifles," said Orne.

"Your race is no match for us, Orne . . . in cunning, in strength, in the prowess of the mind. Your ship landed to repair its tubes. Very inferior ceramics in those tubes."

Orne turned, looked at Tanub in the dim glow of the cab light. "Have you heard about the I-A, Tanub?"

"I-A? What is that?" There was a wary tenseness in the Gienahn's figure. His mouth opened to reveal the long canines.

"You took the *Delphinus* by treachery?" asked Orne.

"They were simple fools," said Tanub. "We are smaller, thus they thought us weaker." The Mark XX's muzzle came around to center on Orne's stomach. "You have not answered my question. What is the I-A?"

"I am of the I-A," said Orne. "Where've you hidden the *Delphinus?"*

"In the place that suits us best," said Tanub. "In all our history there has never been a better place."

"What do you plan to do with it?" asked Orne.

"Within a year we will have a copy with our own improvements. After that—"

"You intend to start a war?" asked Orne.

"In the jungle the strong slay the weak until only the strong remain," said Tanub.

"And then the strong prey upon each other?" asked Orne.

"That is a quibble for women," said Tanub.

"It's too bad you feel that way," said Orne. "When two cultures meet like this they tend to help each other. What have you done with the crew of the *Delphinus*?"

"They are slaves," said Tanub. "Those who still live. Some resisted. Others objected to teaching us what we want to know." He waved the gun muzzle. "You will not be that foolish, will you, Orne?"

"No need to be," said Orne. "I've another little lesson to teach you: I already know where you've hidden the *Delphinus*."

"Go, boy!" hissed Stetson. *"Where is it?"*

"Impossible!" barked Tanub.

"It's on your moon," said Orne. "Darkside. It's on a mountain on the darkside of your moon."

Tanub's eyes dilated, contracted. "You read minds?"

"The I-A has no need to read minds," said Orne. "We rely on superior mental prowess."

"The marines are on their way," hissed Stetson. *"We're coming in to get you. I'm going to want to know how you guessed that one."*

"You are a weak fool like the others," gritted Tanub.

"It's too bad you formed your opinion of us by observing only the low grades of the R&R," said Orne.

"Easy, boy," hissed Stetson. *"Don't pick a fight with him now. Remember, his race is arboreal. He's probably as strong as an ape."*

"I could kill you where you sit!" grated Tanub.

"You write finish for your entire planet if you do," said Orne. "I'm not alone. There are others listening to every word we say. There's a ship overhead that could split open your planet with one bomb—wash it with molten rock. It'd run like the glass you use for your buildings."

"You are lying!"

"We'll make you an offer," said Orne. "We don't really want to exterminate you. We'll give you limited membership in the Galactic Federation until you prove you're no menace to us."

"Keep talking," hissed Stetson. *"Keep him interested."*

"You dare insult me!" growled Tanub.

"You had better believe me," said Orne. "We—"

Stetson's voice interrupted him: *"Got it, Orne! They caught the* Delphinus *on the ground right where you said it'd be! Blew the tubes off it. Marines now mopping up."*

"It's like this," said Orne. "We already have recaptured the *Delphinus*." Tanub's eyes went instinctively skyward. "Except for the captured armament you still hold, you obviously don't have the weapons to meet us," continued Orne. "Otherwise, you wouldn't be carrying that rifle off the *Delphinus*."

"If you speak the truth, then we shall die bravely," said Tanub.

"No need for you to die," said Orne.

"Better to die than be slaves," said Tanub.

"We don't need slaves," said Orne. "We—"

"I cannot take the chance that you are lying," said Tanub. "I must kill you now."

Orne's foot rested on the air sled control pedal. He depressed it. Instantly, the sled shot skyward, heavy G's pressing them down into the seats. The gun in Tanub's hands was slammed into his lap. He struggled to raise it. To Orne, the weight was still only about twice that of his home planet of Chargon. He reached over, took the rifle, found safety belts, bound Tanub with them. Then he eased off the acceleration.

"We don't need slaves," said Orne. "We have machines to do our work. We'll send experts in here, teach you people how to exploit your planet, how to build good transportation facilities, show you how to mine your minerals, how to—"

"And what do we do in return?" whispered Tanub.

"You could start by teaching us how you make superior glass," said Orne. "I certainly hope you see things our way. We really don't want to have to come down there and clean you out. It'd be a shame to have to blast that city into little pieces."

Tanub wilted. Presently, he said: "Send me back. I will discuss this with . . . our council." He stared at Orne. "You I-A's are too strong. We did not know."

In the wardroom of Stetson's scout cruiser, the lights were low, the leather chairs comfortable, the green beige table set with a decanter of Hochar brandy and two glasses.

Orne lifted his glass, sipped the liquor, smacked his lips. "For a while there, I thought I'd never be tasting anything like this again."

Stetson took his own glass. "ComGO heard the whole thing over the general monitor net," he said. "D'you know you've been breveted to senior field man?"

"Ah, they've already recognized my sterling worth," said Orne.

The wolfish grin took over Stetson's big features. "Senior field men last about half as long as the juniors," he said. "Mortality's terrific?"

"I might've known," said Orne. He took another sip of the brandy.

Stetson flicked on the switch of a recorder beside him. "O.K. You can go ahead any time."

"Where do you want me to start?"

"First, how'd you spot right away where they'd hidden the *Delphinus?*"

"Easy. Tanub's word for his people was *Grazzi.* Most races call themselves something meaning *The People.* But in his tongue that's *Ocheero. Grazzi* wasn't on the translated list. I started working on it. The most likely answer was that it had been adopted from another language, and meant *enemy.*"

"And *that* told you where the *Delphinus* was?"

"No. But it fitted my hunch about

these Gienahns. I'd kind of felt from the first minute of meeting them that they had a culture like the Indians of ancient Terra."

"Why?"

"They came in like a primitive raiding party. The leader dropped right onto the hood of my sled. An act of bravery, no less. Counting coup, you see?"

"I guess so."

"Then he said he was High Path Chief. That wasn't on the language list, either. But it was easy: *Raider Chief*. There's a word in almost every language in history that means raider and derives from a word for road, path or highway."

"Highwaymen," said Stetson.

"Raid itself," said Orne. "An ancient Terran language corruption of road."

"Yeah, yeah. But where'd all this translation griff put—"

"Don't be impatient. Glass-blowing culture meant they were just out of the primitive stage. That, we could control. Next, he said their moon was *Chiranachuruso,* translated as *The Limb of Victory*. After that it just fell into place."

"How?"

"The vertical-slit pupils of their eyes. Doesn't that mean anything to you?"

"Maybe. What's it mean to you?"

"Night-hunting predator accustomed to dropping upon its victims from above. No other type of creature ever has had the vertical slit. And Tanub said himself that the *Delphinus* was hidden in the best place in all of their history. History? That'd be a high place. Dark, likewise. Ergo: a high place on the dark-side of their moon."

"I'm a pie-eyed greepus," whispered Stetson.

Orne grinned, said: "You probably are . . . sir."

THE END

IN TIMES TO COME

Next month, Ed Emsh has one of his symbolic covers . . . but it might, in a way, be considered an illustration for the theme of the lead novelette, at that. "Adventure is Somewhere Else" is the cover—and "Despoilers of the Golden Empire" is David Gordon's lead yarn.

That story title is reminiscent of the old, early days of science fiction, isn't it? The story is too, in a way—a real, old-fashioned, thud-and-blunder action yarn, with a real, old-fashioned superhuman super-hero.

And you know, you won't fully appreciate the exact and literal truth of the above statement until after you've read the piece. After all, you wouldn't expect *Astounding* to run a story like that without some kind of a hooker hidden in it, would you . . . ?

THE EDITOR.

THE PROFESSIONAL TOUCH

By LEONARD LOCKHARD

Patent Law is a . . . shall we say slightly tangled? . . . maze. But when Leonard Lockhard exposes its inner nature — it becomes evident that it's a zany, as well as tangled maze!

Illustrated by Freas

ACTS, Mr. Saddle, facts. A lawyer has got to know the facts of his case better than anybody else in the entire world. It is all very well to know the law, but unless a lawyer is the complete master of his facts he is as helpless as a pianist without a piano."

"Yes sir," I said. It was a drizzling winter day in Washington, D.C., but it was warm and snug inside the offices of Helix Spardleton, patent attorney. I had just been summoned into the inner sanctum by means of that gentle bellow that Mr. Spardleton always used when he wanted to confront me with an intricate patent problem. He sat behind his desk, immaculate as usual, and his dark eyes snapped up at me. His cigar was clenched in his teeth at what I had come to learn was the Philosophical Angle—a slight droop below the horizontal. I was in for some discussion here; I could tell.

He continued, "All the law in the world won't help you unless you have the right facts to apply that law to. Ninety-nine per cent of all courtroom procedure is directed at bringing out the facts. The jury system, the Rules of Evidence, direct and cross-examination, the whole trial is slanted at getting the facts. Nobody worries about the law because once all the facts are in, it is easy to apply the law. Besides, each judge on a bench always knows all the law. Right?"

I started to say "Right," but caught myself just in time. I was acutely aware of Mr. Spardleton's views on the capabilities of most judges, particularly those who sat on the Supreme Court of the United States. I caught myself, and then frantically tried to think of something to say. Nothing came. I gulped, and then Mr. Spardleton continued.

"So, Mr. Saddle, the facts are more important than the law when you come right down to it. Now then"—he took his cigar out of his mouth and pointed the glowing end at me—"in patent law the *technology* is the facts." He popped his cigar back into his mouth in one quick flip, cocked his head to one side and looked at me.

I nodded and said, "Yes, I see that. Most patent lawyers work in scientific fields so their facts are all related to some science." It was funny, but I had never thought of it that way.

He beamed at me. It made me feel so good that I beamed right back at him. The whole room seemed to glow.

"Very good, Mr. Saddle," he said. "You have grasped the point very quickly. You are coming along nicely."

I smiled and tossed my head and looked down at my shoes. There wasn't much I could say.

"Yes," he continued. "Take chemistry now. A good chemical patent lawyer must first of all be a good chemist."

I said, "In college in chemistry I won the gold—"

"Only a good chemist can argue

with the Patent Examiners about the facts of a chemical patent application, or explain to a judge all the facts of a lawsuit based on a chemical patent. And I think you have the makings, Mr. Saddle. You seem to be a pretty good chemist."

"Well, thank you, sir. In college in chemistry I won the gold—"

"I think you are a good enough chemist that I'm going to let you handle this invention." He picked up a paper from his desk. "I have here a letter from Dr. Marchare and he says he has a new chemical compound he wants to try to patent and I have decided to let you handle the whole thing."

There it was. I had walked into it blindly without suspecting a thing. Marchare, the genius whose inventions always gave me nothing but trouble. My mind ranged horror-stricken over the things that had happened to me in the past while I had worked on Marchare patent applications. I started to protest, but Mr. Spardleton leaned across his desk and laid the letter in front of me.

"Better get on it right away," he said. "Marchare seems to think it is important." And using his cigar as a scepter he waved me from the room.

I walked briskly out of his office, but I must confess that I drooped a little as I walked across the anteroom heading for my own office. Susan, our secretary, must have noticed something the matter. She looked up from her typewriter and said, "Everything all right, Carl?"

"Oh, yes," I said. "Everything's fine, except I just got another Marchare invention to work on."

Her concern showed in her face. "Oh you poor dear." She hesitated and then said, "One thing, though. You do learn an awful lot of patent law working on Marchare inventions."

"Oh, yes. Yes. I do learn a lot about patent law that way." And shaking my head I went on into my office and dropped a pad and pencil into my briefcase. Then I went out and caught a cab to Dr. Marchare's laboratory in Alexandria.

By the time I got there I had myself spruced up. Mr. Spardleton always said that you have to appear bright and cheerful in front of a client, and you have to make him think that his inventions are the most ingenious you have ever seen. With Marchare, though, I didn't have to pretend; all of his inventions were like nothing ever seen before, each more valuable than the last, and all nothing but trouble for me.

The receptionist at the laboratories waved me on in. I walked down the corridor inhaling the acrid bite of acetic acid and the light penetrating odor of ethyl ether. I turned in at Dr. Marchare's office, but he was not there. I was used to that, so I stepped to the door that opened into his laboratory and threw it open.

The well-stained old lab coat of Dr. Marchare's immediately caught my eye. As usual, Dr. Marchare was

in it; I had never seen him wear anything except that old coat and the overalls under it. He looked more like the janitor than the owner of a laboratory with four hundred people working in it. He was filling a buret from a reagent bottle when I entered. He glanced over his shoulder and said, "Well, Mr. Saddle, nice to see you. You here on business or is this just a visit?"

"Hello, doctor," I said. "No, I'm here on business. I came over to get the data on that new compound you invented. You wrote Mr. Spardleton about it."

"Oh, yes." He carried the filled buret over to a sink and held it high while he manipulated the glass stopcock with his left hand. The liquid ran out in a small stream while he carefully inspected the region right under the stopcock to be certain there were no bubbles there. Then he lowered the buret and brought the miniscus down to the 50.00 cubic centimeter line. That done, he stepped over to the buret stand, replaced the buret, and turned to me. "How good is your chemistry, Mr. Saddle?"

"Well, in college in chemistry I won the gold—"

"This is pretty complex stuff, but I'm certain a bright young man like yourself can handle it. Let me finish this titration and I'll give you the information."

"Why certainly."

Marchare pulled a beaker of colored liquid over under the buret. With his right hand he stirred the liquid, and with his left hand he controlled the inflow of the buret liquid. The color lightened so he slowed the flow. At the last he touched the glass stirring rod to the tip of the buret nozzle. That amount was enough to clear up all color in the liquid in the beaker. It was a swift and accurate job of titrating, and it did not take a trained eye to tell that Marchare was highly skilled in laboratory manipulation.

Marchare pushed the beaker away, read the buret, made a notebook entry, and said, "All right. Let's go into the office."

I followed him and sat down in a chair alongside of the desk. He pulled a small black plastic-bound book from his desk drawer and opened it. I removed my notebook and pencil from my brief case and prepared to take notes. "O.K.," I said. "What's the name of this new compound?"

He looked up at me and said, "What? Oh, it's 2,3,6,7—(a,b,a',b' diphenyl-e,e'-bis (2 - methyl - amino-4 - chloro - 1,3,5-triazyl-6-amino)-c, c'-disulfonic acid) oxapene-4."

I recovered my notebook and pencil from the floor, and smoothed down my hair. "Uh, Dr. Marchare. May I have that again, very slowly please."

Ten minutes later I had it all down; I even had a structural formula for the compound. Dr. Marchare explained that there was probably a way to simplify the naming of the compound—something about fusing

the benzone rings. I found out that Marchare had derived the compound from one of those fluorescent colorless dyestuffs that you throw in the washing machine with your laundry to make the clothes look whiter. I should have paid closer attention to that, but how did I know what was going to happen to me? After all, nobody can think of everything.

I questioned Dr. Marchare about what the compound could be used for; it was no longer useful as a fluorescent brightening agent. I pointed out to Dr. Marchare that before a new compound can be patented, it must be useful—it must have some practical use.

He leaned back to think. "Hmm-m-m. Let me see. I never thought about any particular use for it, not yet, anyway. The compound has one pretty interesting property, though. It absorbs photons and converts the energy into an electrical field."

I looked at him blankly, and he noticed.

"That simply means, Mr. Saddle, that the compound builds up a strong electronegative charge when exposed to light."

"Oh," I said, "is that good for anything?"

"I'm certain it is, but I haven't given it any thought yet."

We each stared out the window, thinking. I looked at the wall of a nearby building and said, half aloud, "If you smeared it on a wall, the wall would become negatively charged."

Bang. Dr. Marchare's hand slapped the desk top so loudly it startled me. "You've got it! There's your use, and a good one, too."

"I have? Where? What?" I said.

"Why, just what you said. Put the compound into a paint or varnish or shellac. Then when you coat walls, floors, ceilings, or furniture with the mixture, you will have a good strong negative charge on all the surfaces. Just think what that will mean."

"Yes," I said, wondering what he was talking about.

He leaned back in his chair, closed his eyes, and said softly, "Very good. The negative charge on all these surfaces will most certainly repel negatively charged particles. No dust on any surfaces. Floors, walls, furniture, the housewife will no longer have to dust her house; nothing will collect dust. What a boon. Every room in the country—no, the world—will want to have it. Yes, sir, my boy." He looked at me. "Very good. I can see you are just the man to handle the patent application. You know your stuff. Mr. Spardleton is fortunate to have an associate such as you, and I intend to tell him so."

"Why, thank you, Doctor," I said. "Now let's work out the details."

Two hours later I had it all down and I could see that there were great possibilities in this new compound. I said good-by to Dr. Marchare and went back to my office.

Mr. Spardleton was standing at Susan's desk when I entered the foyer. Both of them smiled at me. "Well, m'boy," said Mr. Spardleton,

"I just had a very good report on you from Dr. Marchare. He thinks you are a very ingenious chemist—just the man to handle this case. I want to tell you I'm proud of you, too. You're coming along fine, just fine."

Susan got up from her desk and came over and patted me on the shoulder. She said softly, "I'm proud of you, too, Carl, very proud." I had the distinct impression that if Mr. Spardleton had not been there she would have kissed me. You see, Susan and I . . . well you know how it is.

Mr. Spardleton must have sensed it, too. He winked at me, turned on his heel and went into his office, but it was too late. Susan returned to her desk so I went into my own office feeling pretty good, anyway.

I spent most of the next three days writing the case. On several occasions I went out to Dr. Marchare's laboratory to pick up additional information. He ran some tests to prove that the compound would indeed repel dust when it was mixed with a paint and a varnish. It worked well. He went into biological responses to the compound; it was nontoxic and incapable of causing allergic responses. On the fourth day I filed the patent application and turned my attention to other things.

Time sped by as it has a way of doing when you are working on a rigid routine. In the next nine months I filed thirty-nine new patent applications, kept my docket of one hundred and six patent applications up to date, gave a variety of infringement and validity opinions and fulfilled the numberless other chores that a busy attorney in private practice must accomplish. And so I was surprised to find that the period of gestation of a patent application had run; I received my first Office Action from the Patent Office on Marchare's charged compound.

I looked it over and was not at all surprised to see the usual rejection of all the claims. The Examiner rejected all my claims on some silly old patent concerning a colorless optical bleaching agent. The Examiner conceded that my compound was different, but he went on to say that it wasn't very different from the bleaching compound. All Marchare had done was to put an oxygen bridge into the bleaching compound of United States Patent 2,805,999. Putting oxygen bridges into chemical compounds was a known and obvious step. To be patentable an invention must be both new and unobvious. This compound was obvious. Therefore, all the claims were rejected.

Well, this seemed to be the usual Patent Office footwork; they always rejected everything the first time or two. I wasn't much concerned. Looking back, I do not now understand my lack of concern. I had noticed from the very first that the Examiner in the case was Herbert Krome, old Mr. Patent Office himself, the Examiner who had never been reversed on appeal.

When the time came I wrote out an amendment to change the claims a little, and I made some very cogent arguments as to why the claims were unobvious and hence patentable over the bleaching compound. I mailed in the amendment and turned back to my other stuff.

An interference came up in one of my other cases, the first since Marchare's Bird Scarer Case where I had had to take testimony in Sing Sing Prison. This took up quite a bit of my time, and before I knew it I had received another Office Action from Herbert Krome on Marchare's charged compound. He didn't like my arguments and he rejected all my claims again.

This was absurd. In my next amendment I really waxed eloquent in pointing out to him where he was wrong in thinking that the introduction of an oxygen bridge into a compound was obvious. I pointed to several chemical textbooks and showed that they do not teach the making of oxygen bridges as a normal procedure. Who would think to put a bridge into this particular compound? Who could say it was obvious? And look at the fine results one got when one did. Completely unexpected, completely unobvious. It was a powerful argument when I got finished with it. I mailed it convinced that this time I would prevail.

The months went by as swiftly as usual. Before I knew it I heard from Mr. Krome again. He still did not

like my arguments, and this time he gave me a Final Rejection. I was in trouble.

In our office all Final Rejections cross Mr. Spardleton's desk, so I knew he knew about it. Furthermore, it was Mr. Spardleton's habit to pull the file of each case under a Final Rejection and review it from start to finish. It was clear then that Mr. Spardleton was completely familiar with everything I had done in connection with Marchare's Charged Compound Case. Yet he had not sent for me. Now here was something strange.

Whenever I deviated the slightest from what Mr. Spardleton considered perfection he would raise that booming voice of his and summon me to the inner sanctum. This time, silence, and I did not like it. I paced the floor while I thought what to do. The more I thought the more I worried. Finally I tiptoed out to Susan's desk and whispered to her, "What happened? Didn't he read that Marchare file?"

She whispered back, "Yes, he did. But he's acting most strangely. He read it and then pushed it to a corner of his desk. Ever since then he's been sitting there, just staring out the window. I don't know what to make of it. What did you do in that case?"

I shook my head, shrugged my shoulders, and raised my hands helplessly. I was truly concerned now, and I started to tiptoe back to my office wondering what I had done that was so terrible. I was just passing in through my door when it came, loud and clear, reverberating throughout the office. "Oh, Mr. Saddle. Will you step in here a moment please?"

The load dropped from my shoulders. There it was. We were back to normal again; all's right with the world. I held up my head and marched into his office. Immediately I looked for the angle of his cigar to tell me the mood he was in, but he must have just put one out; he didn't have one.

"I've just looked over this file, Mr. Saddle, and I must say that I certainly sympathize with the position you're in."

I felt enormously better. I almost smiled at him until I realized the seriousness of his tone. He selected a cigar from his desk drawer, stripped the wrapper from it, thrust it into his mouth, and lighted a match. With one powerful draw he had the entire end of the cigar glowing. In the same motion he snapped the match out and flipped it into the waste basket; somehow it never seemed to ignite the contents. I watched carefully and saw the cigar settle slowly into a position appreciably below the horizontal. I recognized it: the Despondent Position. Mr. Spardleton was not at all happy, but he wasn't mad, either. I was glad to know that it wasn't my work he was unhappy about.

"Mr. Saddle, how in the world did you ever let yourself get into the position you are in in that Marchare Charged Compound Case?"

My gladness evaporated. "Well, sir. I . . . I don't really know. I know I've got an invention there and it just sort of—"

"But it is your job to convince the Examiner that you've got an invention. Now why haven't you been able to do it?"

"I don't really know." I was feeling worse all the time. "It's this business of obviousness. I just haven't been able to convince Mr. Krome that the compound is unobvious."

"Ah, yes. Obviousness." The cigar rose a little, almost to the Philosophical Position. "Tell me, Mr. Saddle, what are the conditions that must be met before an inventor can obtain a patent in this country?"

I held up my head and said, "That's stated in 35 U.S.C. 103 which reads as follows: 'A patent may not be obtained though the invention is not identically disclosed or described as set forth in Section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.' There's another sentence but it is not pertinent here." I knew most all the statutes by heart; I had to, being near Mr. Spardleton so much.

"Very good." He nodded approvingly. "Now just what does it mean?"

"I beg your pardon?"

"What's this business about the invention being obvious to one skilled in the art?"

"Well, it just means that you cannot get a patent on anything if it is obvious to somebody who knows a lot about that field."

"Who's he? Just where do we find this interesting fellow who has ordinary skill in the art so that he knows what's obvious and what isn't? Do you know anybody like that?"

"Well, no. Not exactly. But a judge can always—" I caught myself in time.

"Ah, yes, a judge. Or a Supreme Court Justice, perhaps. The scholars and the politicians." He leaned back and blew out a large billow of smoke toward the ceiling. It formed a mushroom-shaped cloud. "In laboratories all over the country we have large numbers of highly trained technical people—chemists, physicists, biologists, electronic experts, pharmacologists, dozens of kinds—all working in fields that they devote their lives to. They daily solve problems that the rest of us can hardly comprehend. Then when they may have come up with something patentable we put their work in front of a Justice who doesn't know the difference between entropy and a T-square, and we ask if the work of this scientist is obvious to one having ordinary skill in the art. Now how can a judge possibly know?"

I said, "He can't."

"You are so right. Yet we allow this nonsense to continue. We allow a nonscientific person to judge the

work of a scientist, and he has neither the training nor the inclination to do it; he is completely unfit for the role. Suppose the situation was reversed. Suppose the scientists stepped up onto the bench and began making decisions in the field of law. Couldn't you just hear the judges' cries of 'incompetence'?"

I had to smile at the picture.

"It's one of our major problems in the field of patent law. That's why there are such things as patent lawyers. They work to bridge the enormous gap between the scientists and the judges. That's why I once told you that a patent lawyer must first be a skilled technical man; he must know his facts inside out. He has to, to try to impart to the judge what is obvious and what is not. It's not easy. That's why you are in trouble in the Charged Compound Case."

"But," I said, "Mr. Krome, the Examiner, is not a judge; he's a patent Examiner. He's a pretty good chemist himself. Many of the Examiners are."

Mr. Spardleton sighed. "Yes, and that eases the problem somewhat; they at least understand scientific thinking. But how many of the Examiners have actually worked at a lab bench? How many of them have been assigned scientific problems to solve with the knowledge that they had better solve them if they expect to earn a living?"

"Very, very few," I said.

"Right. And this whole situation produces absurdities on this question of what is obvious and what isn't. You can't learn anything from the decided cases; they obviously turn on how the judge happened to be feeling that day. Let me demonstrate."

Mr. Spardleton leaned back. His cigar rolled to one corner of his mouth, to the Reflective Position. "Now let's see. Take the case of Lee v. Upson & Hort Co., *et al.* There the inventor butt-welded the tubular blanks used to make tableware instead of brazing them as had been done before. Invention?"

I was cautious. "Was there any stated reason why no one had ever butt-welded before?"

"Court never went into it."

"Well, you could argue that—"

"The court didn't listen to much argument. It said that it was obvious to butt-weld instead of braze, and so there was no invention. That ended it. Now how about old Joe Glidden and his wire fence. He took the standard twisted two-wire fence and strung on it separate short wires pointed at both ends and coiled around one of the two twisted fence wires. The Supreme Court said that all he had done was substitute a small coiled wire for the prior diamond-shaped prong with a hole in the center. Was that an invention?"

"Probably not. He just substituted one known thing for— Wait a minute. That's the Barbed Wire Case. Why that's a famous one. Sure it was an invention. Everybody knows that."

Mr. Spardleton coughed slightly.

"The courts didn't know it for quite a while, not until the Supreme Court made up its mind. In that case, though, there were other things at work. Barbed wire helped civilize the West. In one twelve-year period sales of barbed wire jumped from forty-four thousand tons to one hundred seventy-three thousand tons. It pushed everything else off the market. A court would not look so good saying that Glidden's barbed wire was obvious in the face of all those accomplishments, and you can be sure he made the court know it."

I nodded knowingly.

"It is as I've always told you. Know your facts and present them, and the law will take care of itself, but you've got to know your facts. Somewhere in every case is a factor on which the court hangs its hat, and no one can tell in advance what it will be. You've got to be ready when it pops up, ready to hammer it until you win. Now, how about this? A man takes a piece of one measuring apparatus and puts it into another; he has to change things around quite a bit so it will fit. The result is a continuous indicating and recording means for measuring the variation and thickness in a tubular conductor, completely new. Invention?"

"Certainly," I said. "It's new and unobvious. It has all the characteristics needed—"

"Don't go building up too strong a case, because in In re Atkinson, the Court of Customs and Patent Appeals said it was obvious—no invention. The court used some interesting language in that case. It said, 'The question as to what is or is not obvious in the patent seems a question of opinion upon which those called upon to determine the question may differ.' Then it heaved the invention out the window. But at least it confessed to a nasty problem first. Now how about this one concerning a household food mixer. The primary point of the invention was defining the precise degree of angularity of a pivot pin. There's the case of In re Bisley. Do you get a patent?"

That was easy. "Oh, no. There's never invention in finding the best position for an existing part of a mechanism."

"Nicely stated, Mr. Saddle. However, the way the CCPA put it was this: 'Although the change when viewed after the event seems simple, we think it an unobvious one . . .' So they granted the patent."

I stared at him. I found my mouth open so I closed it. "I don't remember anything like that," I said.

"It's on the books," said Mr. Spardleton. "In fact that's one of the troubles. Everything is on the books. You can find cases where almost every man would agree that no patent should be granted, yet the court granted or sustained it. On the other hand you can find cases where almost any man would agree that the patent is good, yet the court struck it down. Are you familiar with the case of

Rochester Coach-Lace Co. v. Schaefer?"

I shook my head.

"The inventor there improved the manufacture of balls of yarn by forcing them through a funnel-shaped tube so that the yarn balls came out the end in a compressed condition. The only prior art was in the rope industry where hemp rope had been passed through a condensing tube. Was there an invention?"

"Well," I said. "There's a big difference between yarn balls and rope. I don't see why a man trying to solve a yarn ball problem would think to look in the rope art."

"The court did. Said it was obvious, so it held the patent invalid. Now compare that with Goodyear Tire and Rubber Co. v. Ray-O-Vac Co. The inventor in the Ray-O-Vac Case put a strong metal sheath around the side walls of the zinc cup in a dry cell; made it leakproof. What do you think the Supreme Court did with that one?"

I said, "The Supreme Court? Must have held it invalid. Everything is obvious to them."

"You are learning. The court tried to hold it invalid, or at least a minority did. Can you imagine a supposedly intelligent man saying that since someone somewhere sometime made the discovery that liquids would not leak through leak-proof solids, this leak-proof dry cell was obvious?"

"A Justice said that?"

"Yes, but since it was the same Justice that once announced the ridiculous 'flash of genius' test for invention, we should not be too surprised; it took an act of Congress to overthrow that absurdity. Anyhow, the rest of the court pointed out that for half a century the use of flashlight batteries had increased enormously despite the leakage and swelling for which everybody tried to find a cure. In all that time only Anthony had thought to put a metal sheath around the zinc cup. As soon as he did his cell swept the country. It was a little silly for the rest of the flashlight manufacturers to go to the courts and say that it had been obvious all the time."

We fell silent, each lost in his own thoughts. Mr. Spardleton's cigar was back at the Philosophical Angle. But as I watched it began to rise. It rose slowly until it stood at an angle of forty-five degrees above the horizontal. I drew myself together, ready. This was the Fighting Angle.

Slam, went Mr. Spardleton's hand on the top of his desk. "We're going to beat them on this one." His voice rattled the walls. "I don't know how we are going to do it yet, but we are going to get a patent on the Charged Compound if it's the last thing we do. Now you go over and have an interview with Mr. Krome and you persuade him to issue this patent. Use everything I've taught you to convince him that you have an unobvious invention here. You've learned a lot in the . . . how long have you been with me?"

"Three years, four months, twelve—"

"Good. You ought to be equipped to do it by now. We'll appeal this thing to St. Peter to reverse the irreversible Mr. Krome if we have to. We'll show him what's obvious and what isn't. Now you go out and *get this patent.*"

"Yes, SIR," I snapped. And I marched out of that office and into my own to study up for my battle with Krome.

Well, I didn't make out so well. Mr. Krome always talked in a very loud voice, but he was unusually loud that day. All the Examiners in the Division were watching and listening to us. I shouted back just as I always do with him but it didn't seem to do me any good. He insisted that it was obvious to put an oxygen bridge into an old compound, and he wouldn't budge from that position. As a last resort I used what I call the Spardleton exit. I rose to my feet, silently put all my papers back in my brief case, looked down on him and said, "Mr. Krome, your stubbornness in this case will force me to make you look foolish on appeal."

I could still hear his laughter ringing down the corridor as I stood waiting for an elevator. It wasn't till I got to the street floor that I remembered that Mr. Spardleton had once said that it was suicide to use such tactics with Mr. Krome. With other Examiners, all right, but never with Mr. Krome. I didn't feel so good after that so I went home early and went to bed; I couldn't even eat any dinner.

I filed the Notice of Appeal in the Charged Compound Case, and a month and a half later I filed my brief. I was very careful about that brief; I wanted it to be just right. In fact I broke one of my own rules and submitted it to Mr. Spardleton to get his ideas. He had a couple of suggestions, but nothing that made me feel badly. This was a new feeling for me. I had full control of the case but Mr. Spardleton and I worked as a team on it. It made me feel as though I had finally arrived as a patent lawyer.

Some months later the day arrived for me to argue the appeal. I had prepared for it very carefully, even to the extent of having Dr. Marchare coach me on all the chemistry surrounding the synthesis of the Charged Compound. I walked into that Hearing Room primed with more chemistry and related information concerning the Charged Compound than any other person in the world, even Dr. Marchare himself. What happened was a pity, but there was really nothing I could do about it.

I walked into the Hearing Room and, as was my custom, I called out a cheery "Good morning" to the three judges as I entered the door. I have always believed that this gets me off to a good start with them. I walked over to the podium, and as I unpacked my brief case I said, "This is the Marchare Case, and we have an issue

as to whether our invention is or is not obvious in view of the prior art."

The judge in the center grunted and began turning papers as I arranged my own. I finally was ready to begin my argument and they were ready to hear me. I looked up before I began to talk and once again I was struck with their nearness. No other tribunal demands that the advocate stand so close to the judges; a mere table width separates them. This closeness keeps the argument more to the level of conversation; it cuts down histrionics. But at the same time it imposes a burden on the advocate who must do without the tricks of the public speaker.

I described the facts in my case and then went into all my arguments on unobviousness. I hadn't talked for three minutes when it became apparent that they had grasped the real issue in the case. One thing about those Board of Appeal judges, they know their technology and they are fast on their mental feet. The trouble was they made up their minds just as fast. At the end of five minutes time I had happen to me that thing which all patent lawyers dread when arguing a case, the judges as one man suddenly folded up their papers, pushed them toward the back of the table, and then sat staring out the window at one side of the Hearing Room. It was clear that they had made their decision and were no longer listening to anything I had to say. I stopped talking and swallowed hard to regain my composure, but

it did no good. I was utterly demoralized. I finally found my voice and finished lamely by asking hopelessly for a reversal of the Primary Examiner. Then I walked out.

Two months later I received the decision and it was as I expected. The Board affirmed the Examiner; the Charged Compound with the oxygen bridge was perfectly obvious over the optical bleaching agent of the prior art. I filed a Petition for Reconsideration, and that, too, was denied. Mr. Spardleton and I had a conference and we decided to sue the Commissioner of Patents to get our patent under 35 U. S. C. 145. And that is how I tried my first case in the United States District Court for the District of Columbia.

I took care of filing all the necessary papers to initiate the Civil Action against the Commissioner. Mr. Spardleton worked closely with me in view of the importance of the case, although I did all the work. I coached Dr. Marchare in his role as a witness, and I arranged for several of the country's outstanding chemists to appear to testify on the obviousness issue. Additionally I sought out the chemical textbooks that were being used in the leading technical colleges and I persuaded the authors to appear on my behalf; this would be an effective way to introduce the textbooks into evidence. I spent two solid months of work on nothing but preparing for trial in the Charged Compound Case. There is no doubt that we spent a small fortune on the case, but Dr. Marchare was more than willing to foot the huge bills. He stood to gain a large fortune if we could get the patent.

A week before trial I could feel the tension growing inside me. Never before had I been mixed up in anything as big as this, and I had to make good. I was losing weight fast and I suppose I was growing a little short tempered. I know I was almost curt with Dr. Marchare when he called to tell me that he had invented another compound. He had put a selenium bridge instead of an oxygen bridge into the same optical bleaching agent and he found that the new compound assumed a strong positive charge instead of a negative charge; he wanted to file a patent application right away. I am afraid I was not my usual cheerful self as I told him to wait until after the trial was over. I hung up a little snappishly, and it was then I realized for the first time that I must be suffering under the strain. I told Mr. Spardleton about it to see if he thought I should call Dr. Marchare back and apologize, but he said no, Dr. Marchare would understand. Mr. Spardleton told me to take the rest of the afternoon off and go to a movie. To make sure I went he sent Susan along. I was much better the next day and was able to review my case for loopholes.

Trial was set for a Monday. On the preceding Friday I wandered over to the courthouse and found out from the Clerk what courtroom the trial

would be in; I wanted to look it over so that I would be on familiar ground when I entered it for the trial Monday. I walked into the room and looked around.

It was impressive with its dark paneling everywhere and its heavy walnut jury box and furniture; I could actually feel the massive majesty of it. As I stood there a group of men in overalls came in carrying ladders and tarpaulins and big cans and brushes. They swarmed over the room in a purposeful manner and some of them began sandpapering various worn parts of the furniture. I went up to a big burly fellow who seemed to be in charge and said, "What's going on?"

"Fixing it up," he said. "Putting a coat of varnish on the whole room."

"But you can't do that," I said. "There's going to be a trial here Monday."

"Oh that's all right. We work through Saturday. It'll be good and dry by the time Monday rolls around."

I nodded and turned to walk away. As I did so my eyes fell on the large cans of varnish standing near one wall. Something flashed in my mind, and I could almost hear Mr. Spardleton telling me how resourceful a successful patent lawyer must be. "Always stay one jump ahead of everybody else, m'boy. Don't overlook a single thing. Somewhere in each case is a thing on which the court hangs its hat, and nobody can tell in advance what it will be." For one wild moment I hung in indecision, and then I flew out of there.

I made it to Dr. Marchare's laboratory in record time, figuring out the amount I would need as I went. The laboratory people made up the alcoholic solution of the Charged Compound without question, and I filled up my pockets with small bottles of the stuff. Inside of an hour I was back in the courtroom poking around as though I were interested in the sanding and other preliminary work. And while I was fooling around near the cans of varnish, I slipped into each one the right amount of the Charged Compound. I went out and dropped the empty bottles into a trash can and went home to sleep soundly for the first night in weeks. The last thing I remember before dropping off to sleep was how surprised the court was going to be when I sprang right under its nose an actual example of the efficacy of the Charged Compound.

The day of the trial was clear and bright with the snap of spring in the air. It was a day to put pep into a statue, but I couldn't respond to it. My witnesses had been arriving all week end from all over the country, and I was exhausted from seeing that they got the right accommodations and entertaining them. I sat in the courtroom next to Mr. Spardleton in a kind of daze waiting for the judge to come in. I remember noticing that there wasn't a speck of dust anywhere, even in the usual places such

as the corners and curlicues. Then Judge Wertz came in.

He was a small bouncy man with snow white hair that contrasted well with his black robe. He had the reputation of being a good judge, although he made the lawyers mind their best manners in the courtroom. We all stood up as he quickly took his chair behind the bench and threw one all-embracing look out over the courtroom. We sat down and waited for him to arrange his papers and try out a pencil. He looked up and said, "A patent case, eh? Everybody in court that's supposed to be here? Counsel for plaintiff?"

I stood up and said, "Yes, your honor. We're ready."

His sharp eyes swept over me and then down to the papers. "You are . . . um . . . Mr. Saddle?"

"Yes, sir."

He looked at Mr. Spardleton and nodded, and then said, "Counsel for the Commissioner here? Oh, good morning, Mr. Hinnel. You're back in court soon, aren't you? You tried a case just last week."

Mr. Hinnel got to his feet. He was a tall, slow-moving, heavy-set man. "Good morning, your honor. Yes, we're having a lot of Applicants running to the courts these days." And he threw a nasty glance in my direction.

"Well," said the judge, "if plaintiff is ready, we'll hear his opening statement."

I stood up and briefly described what the case was all about. Mr. Spardleton and I had worked long and hard on that opening statement to keep it short and right on the issue. It is important to make a good impression on the judge right at the start. I finished, and turned back to the table to get my list of witnesses. Mr. Spardleton handed it to me with a wink.

The judge said, "Succinct opening statement, counselor. Proceed."

I opened my mouth to call the name of my first witness when the silence of the courtroom was shattered by an explosive sneeze from the direction of the bench. I turned to the judge. He was shaking his head with one hand over his eyes. "Excuse me," he said. "Please go on."

My first witness was Dr. Marchare, and I was glad to see that the judge knew him by reputation. I led Dr. Marchare through a carefully planned direct examination that fully explained how the Charged Compound was made and what it was. I had prepared large charts to make things easier on the judge, and I asked Dr. Marchare to repeat in different language the tricky parts of his testimony. It was a lengthy direct examination; it took all morning. It was highly successful, though, since when it was over there was no doubt that the judge understood how Dr. Marchare had invented the Compound and what it was good for. Everything went swimmingly, except that there were four more sneezes from the judge. Loud shattering things they were, with no warning

that they were coming; I found them highly distracting. I noticed when we recessed for lunch that the judge's eyes were looking a little watery. For a few moments I wondered if the judge by any remote chance could possibly be allergic to the Charged Compound. But then I realized that Dr. Marchare would not be mistaken about a thing like that; he had checked the compound with his usual meticulous care, and no allergic reaction could exist.

No sooner had we resumed the trial after lunch when the judge began sneezing again, more and more frequently. He felt badly about it and kept apologizing and saying that he couldn't understand it. I continued my examination of witnesses but it got very difficult. The judge seemed to be gasping for breath between sneezes and he consumed an entire box of nose tissues during my last two witnesses for the day; I had one more to go the next day.

I was sorry about the uproar from the bench during my last witness because I had decided—as a question of tactics—to let the judge in on the fact that the entire courtroom was coated with the Charged Compound. I tied it in with some questions to the witness and I was hard put to find moments when the judge was quiet enough to hear what was being said. After the witness had stated his views on how a room treated with the Charged Compound would prevent disposition of dust, I announced to the court between sneezes that I had so maneuvered things that the courtroom was coated with a varnish containing the Compound.

The judge stared at me, and I could feel Mr. Spardleton's eyes on the back of my neck. I thought the judge had not understood me so I began to explain it to him again. He interrupted me, and in a choked-up voice he said, "You've got that stuff in here? You've got all the dust in the room suspended in the air? Me with asthma and you fill the air with dust? Counselor, I could cite you for contempt for this. This . . . this Charged Compound of yours is enough to kill a man; it's a menace to society. You got any more witnesses you want to present before I give my decision in this case? *Achoo.*"

I couldn't talk so I held up one finger.

"All right," said the judge. "We'll hear that witness if you insist. I'll try and arrange for another courtroom tomorrow, but we're crowded around here. Court recessed until ten o'clock tomorrow morning." He banged his gavel and fled, running eyes, red nose and all.

I stood and stared after him until I felt a hand touch my elbow. It was Mr. Spardleton. "Well, Mr. Saddle," he said, "you certainly took the bull by the horns that time. That was quite a bold action you took and a good patent lawyer has to be bold sometimes." Half to himself he continued, "Although I'm not certain that this was one of the times."

I tried to say something to him and couldn't. He smiled at me and patted me on the shoulder and said, "Don't worry about that contempt citation. If he does it, I'll defend you." And he turned and walked out.

I slowly got my papers together and went home. I had a bad night. I tried to get in touch with Mr. Spardleton, but I could not reach him anywhere. There was no one else I wanted to talk to, not even Susan, so I sat in my room and stared at the wall. Later on I went to bed and tossed all night.

I made no effort to get to the courtroom early the next morning. There seemed no sense in going at all; I know a lost case when I see it. I got there about ten minutes before the trial was due to start. We were in the same courtroom; none other was available. Mr. Spardleton was sitting there comfortably reading the paper. "Good morning, Mr. Saddle," he said. "You don't look as though you slept very well."

"I didn't sleep at all," I said. "And I wanted to tell you how awfully sorry I am about putting the Charged Compound into the varnish. I've ruined everything."

"Ruined everything! Why m'boy, you've cinched this case for us. We can't lose now."

I stared at him incredulously and started to ask him what he was talking about. Just then Mr. Hinnel came in the door and walked over to our table. "Well," he said, "I guess you fellows have won my case for me. I thought I might have a tough time on this point of obviousness with all those big-name witnesses of yours, but you fellows have sewed it up very nicely, for me."

Mr. Spardleton looked up at him and smiled, and a more insidious smile I have never seen. He said, "You've eaten words before, Mr. Hinnel. Better get ready again."

Hinnel stared at him. "Look, Mr. Spardleton. I know you are full of tricks, but you'll never pull this one out. You know you're licked."

Mr. Spardleton smiled again and turned back to his newspaper with a supreme air of unconcern. Mr. Hinnel looked puzzled for a moment, then he shrugged and smiled, and walked back to his desk. The courtroom filled with the people necessary for trial, and soon the clerk called us to our feet. The judge was about to sit.

I never saw a judge enter a courtroom the way Judge Wertz did that morning. In fact I never saw any man enter any room that way. The curtain parted slightly and his nose thrust through, quivering. His face followed, pointing this way and that as he tested the air. Gradually he emerged from the curtain in quick little steps with long pauses in between. He seemed to be pulled gently forward by his nose which was thrust out in front of him as if to lead the way. He approached the bench looking like nothing so much as a hunting

dog cautiously stalking a covey of quail. All of us held our breaths waiting for that first unheralded blasting sneeze. None came, and the judge sat down gingerly on his chair as if he expected it to explode. Nothing happened, and he relaxed somewhat. He looked at me and said in a harsh tone, "Proceed, counselor."

I called my last witness and feebly drove home my last point on the obviousness question; my heart was not in it. After the witness had stepped down the judge looked around and said, "The air is pure in here. What did they do, refinish the place last night?"

The question was not directed to anyone in particular, and the courtroom remained silent. For the first time I noticed that the air smelled clean and pure, the way it does in the country after a rain. The judge shrugged his shoulders, and looked over at Mr. Hinnel. But before he could speak, Mr. Spardleton's voice rang out. "Ah, Judge Wertz. I can explain the clean air in here if you'd care to listen."

The judge turned to him. "Mr. Spardleton. I wondered if we were going to hear from you during this trial. Yes, I'll listen."

"It's a very simple thing, judge. Dr. Marchare has also invented a compound that imparts a *positive* charge to a layer of paint or varnish." He stopped and waited.

"Well," said the judge, "what about it?"

"It's obvious, your honor. See that vase?" He pointed to a three-foot high empty vase that none of us had noticed before, standing near one wall. "Well, I simply painted the interior of that vase with that second compound." Again Mr. Spardleton waited.

"I don't understand," said the judge.

"Well," said Mr. Spardleton, turning toward Mr. Hinnel. "It is perfectly obvious, isn't it, Mr. Hinnel?" He waited. Mr. Hinnel stared at him. "Well, Mr. Hinnel. It is perfectly obvious. Anyone can see it, it's so obvious. Right, Mr. Hinnel?" Again that deadly wait. And now Mr. Spardleton's voice rose to a dull roar. "Great Cæsar's ghost, man! A thing as obvious as that and you cannot see it? Look here! This entire room and all the furniture in it is coated with a layer of varnish bearing an appreciable negative charge. This repels the dust—keeps the dust off everything in the room; the dust stays in the air. Inside that vase is a coating bearing an appreciable positive charge. It attracts the dust. So all the dust in the room is attracted to the interior of that vase where it is now waiting to be dumped out. Isn't that perfectly obvious, Mr. Hinnel?"

Mr. Hinnel's mouth worked, but no sound came out.

The judge cut in. I looked at him, and he was a changed man. He sat on the edge of his chair and his eyes snapped and his head bobbed up and down in his eagerness. "You mean," he said, "that you have eliminated

the dust problem in the interior of any structure?"

Mr. Spardleton shrugged depreciatingly. "Provided we get the patents, yes."

"Have you filed a patent application of this second compound, this positive one?"

"You'll have to ask Mr. Saddle that. He's handling this whole thing."

The judge looked at me, and I could only shake my head at him.

"All right," said the judge. "I'm going to deliver a bench decision in this case. Mr. Hinnel, you certainly don't have much to offer at this point, do you?"

Mr. Hinnel must have been as speechless as I; he simply shook his head.

"Then I find for the plaintiff, and I direct the Commissioner of Patents to issue a patent to Dr. Marchare on this Charged Compound. So ordered." Bang went the gavel.

"Now, Mr. Saddle," continued the judge "you file a patent application on this second compound, too. And if the Patent Office gives you any trouble, you bring it here." He looked significantly at Mr. Hinnel.

I nodded, and the trial was over. Mr. Spardleton helped me pack my papers, and then he guided me out the door. "Yes, sir," he said as we went down the steps. "It's just as I've always told you. It isn't the law that controls in patent cases. It's a full grasp of all the facts."

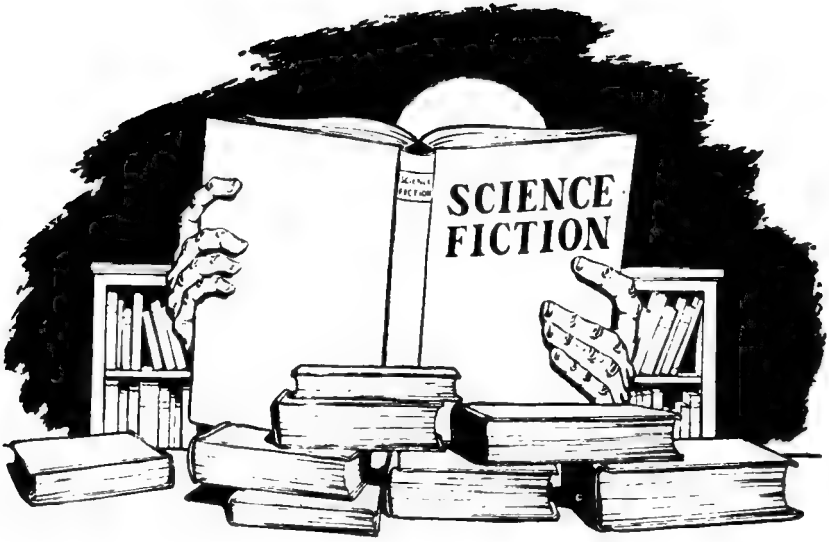
THE END

SOME PEOPLE ARE HARD TO DISCOURAGE...

The beetle *Niptus hololeucus,* while it appears to be a not very common type, seems to be of a tougher breed than most. While it isn't addicted to the diet, it can live on cayenne pepper, ammonium chloride, and quite a broad spectrum of generally non-dietary substances. It is also found, occasionally, inhabiting the corks of the bottles used by entomologists to kill their specimens, living in peaceful coexistence with the cyanide in the bottle.

Wonder how it makes out on a diet of uranium fission products?

THE



REFERENCE LIBRARY

BY P. SCHUYLER MILLER

THE JUVENILES

IF "THEY" has become the ugliest word in the English language, "juvenile" must be one of the most abused in the language of critics.

I have no intention of denying that the complaint that an ostensibly serious adult book is juvenile, is a perfectly legitimate critical statement. I do object to the use of the term by lazy critics, to categorize almost any form of fiction that can be given a label: westerns, mysteries, love stories, adventure tales, sport stories—and science fiction.

This form of pigeonholing is a labor-saving device that is by no

means restricted to critics, though they were early to see its advantages. "Screening" devices are by now standardized in industry, education and government. If you don't have a Ph.D., you are automatically excluded from consideration for certain types of job, no matter what your individual abilities may be. (The resurrection of the "gentleman scientist," that John Campbell has been discussing here, may be a reaction to this device.) A gifted student who wants to get a degree in science in any of a number of good universities, instead of going to the home-town teachers' college, can't hope to get the scholarship that will make it possible unless the family can pass a standardized means test, adopted to save admissions officers the responsibility of considering individual cases that aren't cut-and-dried.

Calling science fiction "juvenile" may be a device that allows the critic with "objective" standards to ignore it. That such men of mature judgment as Basil Davenport and Clifton Fadiman do read it, do enjoy it, and do understand it, seems to deny the blanket classification. And to confuse the issue happily, there is the fact that many science-fiction books that are "juveniles" in the sense of having been written for young people, are less "juvenile" in the literary sense than some of the science fiction published for adults.

As a matter of fact, in the present round-up of recent science fiction written for people below draft age, I have deliberately excluded two new books by Andre Norton and one by Robert A. Heinlein. The latter, though published for teen-agers, has been serialized in our contemporary, *Fantasy and Science Fiction,* just as its predecessor in this series, "Citizen of the Galaxy," ran here in Astounding.

The new crop bears out the truism that some juveniles are more juvenile than others. You couldn't ask for a more maturely written SF story than last year's "Star Girl," by Henry Winterfeld, although it was intended for children of ages eight to twelve. On the other hand, since I duly noted the return of "Tom Swift," I have not been moved to seek out his further adventures and report them to you, as I will the Norton and Heinlein books.

The more honest critics can put together a number of criteria for juvenility in a story, with which most of us would agree. Values tend to be all black and white—"good guys" versus "bad guys." Characters aren't real, their problems aren't the kind that would concern real people, the plot is pure formula, and so on. This issue of "reality" automatically excludes both science fiction and fantasy for some readers, who find such stories "farfetched" or "implausible."

Personally, I believe that writer is more skilled who can capture my imagination and my emotions, and carry me with him through the most preposterous of situations. I believe that good, adult books exist whose whole purpose is to create suspense . . . to recreate the past in mood and

fact . . . to produce a sense of wonder. That books do these things does not make them juvenile to me—but good juvenile books should do them all.

Of five teen-age novels at hand, two are juvenile juveniles and the other three range upward to somewhere just below the Heinlein-Norton level. I'll add two fact books that are not juvenile at all, except in the age-level for which they are published.

"Blast-Off at 0300," by Hugh Walters (Criterion Books, New York; 1958; 187 pp.; $3.50) is intended for age eleven and up. It seems to be a reprint of something previously published in England, where the juvenility of juvenile books may be deeper seated than west of the Atlantic, in spite of Kipling, Stevenson and many another. At any rate, undersized Chris Godfrey, seventeen-year-old science student, is picked out of thinnish air to ride the first manned rocket out of the atmosphere, and photograph some mysterious domes that have been appearing on the Moon. The plot is a mild brew of misunderstanding and sabotage, and the book's only value is in a plausible picture of the testing grounds at Woomera, in Australia, which may actually be just as phony as the story.

That an American writer can do even worse is demonstrated by John Ball, Jr., flier, journalist, and erstwhile staff member at Hayden Planetarium, with "Operation Springboard" (Duell, Sloan and Pearce, New York; 1958; 168 pp.; $3.00). The book isn't earmarked, but I'd say it's for older boys than Walters'.

Crippled Chet Pawling dreams up a scheme for getting to the Moon in a giant, rocket-propelled flying boat that will get up to orbital speed by scooting across the surface of the ocean, then flying up through the atmosphere like a regular plane, and finally using its reaction-motor in space. He learns that such a craft is being tested in the Pacific, and for obscure reasons is invited to join the crew (he's a court reporter who goes along to keep a log of the trip).

A United States-Soviet race develops—like the English-Soviet race in "Blast-Off"—a test run turns into the real thing, and they all go barreling off to Venus instead of the Moon, arriving just ahead of the Russians. These, needless to say, try to scuttle the Americans and take over the plane. I don't object too much to this corny plot, and I suppose the lack of scientific basis for the interplanetary seaplane is no worse than the "off we go into the space-warp yonder" that we've learned to live with. I do object that Venus is made no more real or exciting or wonderful than a patch of Florida woods, that the author seems to believe in that thoroughly exploded old picture of the astronaut's weight gradually decreasing as he gets farther and farther from Earth in an orbital course, and that there is no concept at all of the mass/energy economics of space flight.

Isaac Asimov, as "Paul French," has written the sixth of his "Lucky Starr" space operas for ages twelve to sixteen in "Lucky Starr and the Rings of Saturn" (Doubleday & Co., Garden City, N. Y.; 1958; 179 pp.; $2.75). David Starr, young scientific genius and member extraordinary of the Council of Science, and his undersized Martian pal, Bigman Jones, are this time tangling with a Sirian outpost on Titan, a lost message capsule, high—or low—interstellar diplomacy, and the Asimovian laws of robotics.

The book doesn't pretend to be more than a good future-action yarn, and the "off we go" approach is pretty strong, but on the positive side we have: (a) a sound astronomical picture of what Saturn's rings are; (b) fiendish enemies, some of whom are pretty reasonable guys; (c) a wonderful way of hiding out on a satellite of one of the big hydrogen/helium planets; (d) two puzzle-problems in which Lucky outwits the villains by using first science, then psychology. This is quite a lot of plus value to pack into a worn-out old plot formula, but it's the kind of thing we expect of Asimov and of "real" science fiction, whatever the readers' supposed ages.

Another series, the Sub-Sea Academy sequence by Frederik Pohl and Jack Williamson, is also dedicated to plenty of action, mystery, and a well-drawn exotic setting. In "Undersea City" (Gnome Press, Hicksville, N. Y.; 1958; 188 pp.; $2.75), Cadet Jim Eden is back in the bubble-cities of the ocean deeps, involved in a mystery that seems to cast his uncle as villain. The undersea culture of our future is very well realized and there is an interesting and scientifically plausible gimmick in earthquake prevention by earthquake-making. Whereas Lucky Starr is getting farther and farther from Earth with every book, and will almost certainly land in the Sirius system soon, Jim Eden seems bound for the interior of the Earth by way of its ocean deeps.

Raymond F. Jones has a very different kind of science fiction novel in "The Year When Stardust Fell" (John C. Winston Co., Philadelphia; 1958; 203 pp.; $2.75). His theme is the struggle between reason and unreason in a world thrown back to a near Stone Age level, when compounds in the tail of a comet cause metal surfaces in all sorts of machinery to weld together by molecular interpenetration. Ken Maddox and his high school science club, in Mayfield, Colorado, do their best to help the local college's adult scientists unravel the scientific mystery and find a way around the "death" of the machine-based civilization of our time. But they're brought up hard against the element, in their little town and outside, that can't wait for science and looks to force for an answer.

Teen-agers, in the current segregation struggle, have shown that they understand the reason versus prejudice situation much better than their

communities' adults. Many potential readers of Jones' story of the near future will be able to recognize the same elements in their own situation today—which I am sure is exactly what he wants them to do.

Jones' book teaches a moral lesson . . . the Pohl-Williamson yarn creates a consistent and possible but strange world just beyond our noses . . . Asimov's space opera teaches authentic astronomical facts. They do this entertainingly, in the course of an exciting story with young heroes and heroines, whereas Ball's book distorts known science and makes no effort to make Venus real.

But on to facts. One of the best of Isaac Asimov's series of semi-textbooks in science is "The World of Carbon" (Abelard-Schuman, New York; 1958; 179 pp.; $2.75). This is the first of two volumes on organic chemistry; the second will be "The World of Nitrogen." I can't think of any better collateral reading for a high school course in chemistry, because Asimov's well known ability to make facts come alive is working full blast. There's just the right blend of solid, "pure" science and down-to-earth application . . . neat twists of color and humor . . . yet no distortion for the sake of simplification.

The fourth and last of Willy Ley's "adventure in space" picture books is "Space Travel" (Guild Press, Poughkeepsie, New York; 1958; 44 pp.; $1.00). It is one of the best, with terrific planetary portraits by John Polgreen, the primary grades' Chesley Bonestell. Buy 'em for the kids and keep 'em for yourself, for the pictures, if you can't be seen reading a kids' picture book. The set—which ought to be continued—consists of "Man-Made Satellites," "Space Pilots," "Space Stations," and now "Space Travel." The color plates in the last two are especially good.

The list of excellent, beautifully illustrated science books for children is growing like the budget. There is also a sizable body of alleged SF for young children, but most of it is really fantasy and I've kept away from all but such outstanding books as "Star Girl." Sneak into the "juvenile" department of a good bookstore some time, and leave your preconceptions behind you.

STARBURST, by Alfred Bester. Signet Books No. S-1524. 1958. 160 pp. 35¢.

The eleven stories in this collection illustrate the very respectable and too little employed talent of the author of "The Demolished Man" and "The Stars My Destination." Two of the best were first published here in Astounding: the grim little "Adam and No Eve," from 1941, in which a man and a dog return to the planet he has carelessly destroyed, and "Oddy and Id"—originally "The Devil's Invention"—a frolic about a luck-prone man.

The shocker of the collection is "The Starcomber," already an anthology favorite under its original *F&SF*

title, "5,271,009." This story of a mad artist, who draws portraits of a madder mystery-man on dollar bills, creeps along the mental borderline that was explored in both of the author's novels. It's hard to forget. So, for other reasons, are a group of blandly mocking little tales: "Disappearing Act," for example, in which satirized military bureaucrats come up against the uncontrollable . . . or "Star Light, Star Bright," in which a school teacher and a pair of crooks try to run down an elusive small boy with marvelous friends . . . or "Hobson's Choice," in which a statistician hunts for an impossible overflow of people into a shattered postwar world . . . or "Of Time and Third Avenue," with the little man from tomorrow who wants to buy a strayed almanac.

Remaining? "The Roller Coaster" is a time-marker, saved by bright style. "Travel Diary" is a brief, sharp satire on the unchanging tourist, galactic style. "Fondly Fahrenheit" is another favorite: a kind of mystery which asks how an android, by nature unable to harm human beings, can be a mass killer. Finally, "The Die Hard" is another short, brilliantly written picture of a holdout against perverted, diverted humanity.

It's too bad Bester spends so much time at the sensible business of making a living in television. Eventually, maybe, he'll have enough on hand for another collection as good as this.

FIRE IN THE HEAVENS, by George O. Smith. Avalon Books, New York. 1958. 224 pp. $2.75.

The copywriter who did the jacket blurb for this book version of the feature novel in the July, 1949 *Startling Stories* evidently has not yet caught up with Copernicus. He/she thinks that the Sun travels in an orbit around the Earth, and that a nova occurs when it begins to spiral closer . . .

Needless to say, this is not an idea you would ever get from George O. Smith, especially in the kind of old-ish-fashioned *science* fiction yarn he can do so well. The plot is essentially a puzzle of physics and astronomy, developed along several lines at the same time. The sub-plots are rank formula melodrama.

Instrument-maker Jeff Benson is trying, by refining his measurements, to prove that there is a leak in the law of Conservation of Energy. Dr. Lasson, Palomar (?) astronomer, has detected alarming signs of instability in the Sun. Dr. Louis Phelps, physicist-in-waiting to the industrial empress, Lucille Roman, has a seemingly limitless source of energy blazing out of nowhere. And rival tycoon Charles Horne is out to make money, Lucille, and anything else that is makable.

Is the Phelps jet milking the Sun and causing it to go over into a nova stage? Horne tells the world so, and lets loose rioting and bloodshed in which Phelps is lynched and Lucille barely escapes. Will Jeff Benson save

the day in his lonely lab? You know dang well he will . . . it's how he'll do it that counts. And to me it's fun to ride along.

This is the unabashed SF melodrama that *Startling* and *Thrilling Wonder* handled so well in their banner days. It shouldn't be allowed to die out.

DEADLY IMAGE, by Edmund Cooper. Ballantine Books, New York. No. 260. 190 pp. 35¢.

This is another Ballantine book that deserves a hardcover edition—which I imagine it has had in England—more than some titles that get that permanence.

It is the story of John Markham, a Londoner who is trapped in a food-storage vault at the beginning of the Third World War, the "Nine Days Tranquilizer" of 1967, and is revived in 2113. He finds a world in which androids have been allowed to take over the work of the world—including science and government—while the human race has evolved an elaborate society of unrestrained artistic expression and play. There are a few mavericks, and they are duly suppressed by the android government. Markham, nostalgic for the freedom and individuality of his own day, is welcomed as a symbol of revolt.

All this is not too original, but what the author does with his plot is different. He raises the question whether the androids themselves are not now alive, in every definable meaning of the term, and whether they have not become a race which will compete with Man instead of serving him. He raises, through the personal android Marion-A, the possibility that a machine can develop a personality that was not built into it? In a brief flash, he shows us psychological reasons why such a society as this can be necessary for Man, after the holocaust in which he has pulled the world down on himself. He treats his theme, in other words, as a "serious" novelist would—and does it well.

SF: THE YEAR'S GREATEST SCIENCE-FICTION AND FANTASY, edited by Judith Merril. Dell Publishing Co., New York. No. B-119. 1958. 255 pp. 35¢.

This annual anthology, which has been the year's best SF anthology for all three years it's been in existence, is certainly your best buy. I haven't waited for Gnome Press to come out with the hard-cover edition, "SF '58," but the price is reported as $3.50 . . . or only $1.50 to $1.20 if you've signed up for Marty Greenberg's "Pick-A-Book" plan.

1957-'58 Judith Merril has dubbed "the year science caught up with fiction," and she has added a short section of factual articles dealing with the sputniks, with comments by Arthur C. Clarke, Willy Ley, Anthony Boucher, G. Harry Stine—alias "Lee Correy"—and Dennis Driscoll, teen-

aged winner of a *Boys' Life* competition.

As I've said before, the title of the anthology is a misnomer, and I am sure the editor makes no attempt to live up to it. You will all think of "greater" stories published during the past year, and Miss Merril duly lists nearly three pages of them in fine print, in her "Honorable Mention" section. Some were excluded for reasons of space, some for other reasons, but basically because this editor always turns out a beautifully balanced selection, SF and fantasy, light and serious, long and short, "literary" and action, no matter how one-sided the year may have been. She also rakes the thickets as thoroughly as any bird-dog, and this year's eleven stories come from *Playboy, Atlantic Monthly* and *Mademoiselle* as well as from the specialized science-fiction and fantasy magazines, American and English. For very good measure, there is an original story, "Near Miss," by Henry Kuttner, his last unpublished story before his untimely death last February. The Dell edition should be worth buying for that alone.

"Near Miss" is one of three fantasies in the anthology, a pleasantly mocking little story about an old wizard in a small Mexican fishing village, who is asked to bewitch a jeep. This is in Kuttner's delightful "Lewis Padgett" vein. As grim as "Near Miss" is pleasant, Theodore Cogswell's "You Know Willie"—from *F&SF*—offers a kind of solution to racial viciousness. The third, Eugene Ionesco's "Flying High" from *Mademoiselle,* is pure surrealism.

By all odds the most acclaimed story of the year and the collection is undoubtedly George Langelaan's "The Fly" from *Playboy;* I've just seen a trailer for the 20th Century-Fox color film made from it, which should set some kind of mark among the current flood of horror pictures. In this one, a fly gets into the professor's matter-transmitter just as he is using it on himself, and the two become scrambled. Acclaim or not, for my money the best of the book is no horror-thriller at all, but the latest in Zenna Henderson's quiet, gentle, compassionate series about "The People," castaways here on Earth. "Wilderness" brings a new element into the series, and as a story in and for itself is one of the best arguments for "progressive" child-centered teaching. I hope there are departments of literature in teachers' colleges somewhere with insight enough to recommend these stories by a teacher, about teaching, to their would-be and will-be teachers of tomorrow.

Now for the rest. "Let's Be Frank," by Brian W. Aldis, from the English *Science Fantasy,* is an underplayed genetic comedy which might well have gone into Clifton Fadiman's "Fantasia Mathematica" for its picture of the pyramiding of a dominant trait. "Let's Get Together," by Isaac Asimov—*Infinity*—is a robot yarn—how to detect ten humanoid robots among all the peo-

ple of the United States—which isn't up to the author's own high standards. "The Wonder Horse," by George Byram—*Atlantic*—is a perfectly straightforward story about a mutant racehorse, and a lovely job of story telling.

Rog Phillips' "Game Preserve"—from *If*—gives us a once pot-boiling writer in a cruelly sardonic vein, quite unlike his many yarns for the Chicago-based *Amazing*. One of my objections to the collection is that the theme is a little too much like the story that follows, "Now Let Us Sleep," by Avram Davidson—*Venture*—which deals with our treatment of the people of another planet. Finally, Algis Budrys' "The Edge of the Sea"—also *Venture*—is not particularly original, or particularly anything but a very well done story about a strange thing found in the sea.

INTO OTHER WORLDS, by Roger Lancelyn Green. Abelard-Schuman, New York. 1958. 190 pp. $3.75.

This is by a large margin the most enjoyable of the many histories of space-flight in fiction that have come my way. Others may be more comprehensive, especially where books not published in England—e.g. Serviss' "A Columbus of Space"—are concerned, but nobody else has has shown Mr. Green's appreciation of a good story, whether it is Burroughs' "Moon Maid," Verne's "Hector Servadac," or Lewis's "Out of the Silent Planet," which he considers the greatest of them all.

The story begins, as it must, in the Second Century A.D. with Lucian's two visits to the Moon, and it comes down to our own time. It takes in fairy tales, satiric pamphlets, serious treatises, and Victorian romances of the heaviest kind. And, since you may have wondered about what happens in these "classics" of very old, the author offers you large excerpts and a running synopsis of any book of note. The slow transition from the tongue-in-cheek mythology of Lucian's day, down through the religiously directed semi-myths of Kepler, Godwin and their contemporaries, through the heavy-handed satires of the Eighteenth Century to the scientific romances of the Nineteenth, is fascinating to follow.

Some of the venerable old books were good stories. This will tell you which ones.

THE INHABITED UNIVERSE, by Kenneth W. Gatland & Derek D. Dempster. David McKay Company, New York. 1958. 182 pp. $3.95.

This is an English import: Gatland has edited several excellent technical books on rockets, and his collaborator is a test pilot who may or may not have done most of the writing, or possibly the polishing of Gatland's ideas.

The theme and ground covered

are not new to this audience, but the performance is good and goes a little farther than most of the books in the field. We get a clear, non-partisan picture of current ideas about the origins of the galaxy, the stars, and planets like the Earth . . . about the origins of life, and its evolution, and what this indicates about the likelihood of life on other worlds. Mars is discussed at some length, with newer data than are in some of the books we've noticed here.

Then the authors go on to talk about some of the puzzles of the physical universe: the duality of light, particle and wave at the same time . . . time and its role in relativity and in Dunne's "serial universe" . . . and finally, which is where other books have stopped, what all this means for religion, of both the basic and the dogmatic varieties.

The book will be best for someone who hasn't been reading much in this field. I imagine too much will be familiar to this audience, to make it worth the price.

THE COMING OF THE SPACE SHIPS, by Gavin Gibbons. Citadel Press, New York. 1958. 188 pp. $3.50.

This book—very thin for the price, though that doesn't seem to bother saucerians or occultists—was published in England before the author's "They Rode in Space Ships," which was the first to appear here. It is the usual rehash of the best publicized sightings, together with details of a number of others in England and elsewhere in Europe. The author himself says he has seen nine saucers.

Unless you're a convert or a completist, the book will be of interest for only one reason. The author here coins a series of names for various types of UFO, which I listed in reviewing his other book, and which seem to have been adopted by the occultist wing of saucerdom much as the Adamski-model saucer has been. The names have a vague Sanskrit base because Mr. Gibbons accepts the theory of his countryman, Desmond Leslie, that UFO's are manned by the descendants of the people of Atlantis, who left Earth to escape the catastrophe that sank their continent, and who spoke "something akin to Sanskrit." The author also believes that saucers can dematerialize or become invisible, and that they may come from a universe "in another vibration" coexistent with ours —a concept of Victorian vintage which I shamefacedly admit I used in my first published story, long, long ago, and which means exactly nothing, nor did then.

Be all that as it may, Mr. Gibbons' terminology offers names for four different types of UFO. One, his "vimana," is the common small Adamski-type scout craft with three landing globes under a lampshade-like body, and a crew of three or four various-sized men. This one is a real Sanskrit word that Leslie dug out of the Aryan literature, meaning

something very like "sputnik." "Vulya" are giant disk-ships five hundred to one thousand feet in diameter, used for interstellar jaunts; one of them "disintegrated" Mantell's plane. "Vunu" are cigar-shaped mother ships about one hundred feet long, like illuminated recorders, which may act as ferries in the vicinity of planets. They spawn swarms of vimana. Finally, "vidya" are small, shining, unmanned scanners anywhere from six inches to twelve feet across, including just about anything of any shape or description.

You have seen these names coined in this book. The next step, general usage in UFO literature, is taking place: no real reason why it shouldn't, if geologists and archeologists can assign equally arbitrary names to strata and cultures. The final stage comes with the tacit assumption that these are *the* names saucer people give to their own ships—therefore they *are* from Atlantis—therefore all Gibbons' and Leslie's other ideas are "confirmed"—and away we go.

METHUSELAH'S CHILDREN, by Robert A. Heinlein. Gnome Press, New York. 1958. 188 pp. $3.00.

Gnome Press has now taken over the "Future History" series of interconnected stories that Shasta started a long time ago. In case you've forgotten, Heinlein wrote these stories —most of which appeared in this magazine—as episodes in the imaginary future of Mankind, from the present into the Twenty-seventh Century. This particular novel comes close to ending the series, unless Gnome persuades Heinlein to expand on his classic "Universe," published some years ago as a paperback, to make one last book.

"Methuselah's Children" is based on the three-part serial published here in 1941; I haven't been able to compare them, to estimate how much has been added, but it seems to be quite a bit. Even so, it would have been a better book if the author were writing it now; his deftness at creating societies is increasing.

This is the story of the long-lived people, the "Howard Families," who for some three centuries have been bred for longevity. Most of them hide behind doctored records in the regimented world of the Twenty-second Century; some have come into the open. And the short-lived public wants their "secret"—a supposed elixir of life. The Families escape, thanks to the archaically decisive Lazarus Long, oldest of them all, stealing the planet's second starship —the first was the sealed ship-world of "Universe"—and visiting a series of planets where even their special powers seem diminished by what they find. Finally they must make a basic decision . . .

Heinlein has improved a lot in the seventeen years since this story first appeared, but the inimitable touches are there. Lazarus Long, while he is conniving to get control

of the *New Frontiers* without tipping off the Families' plan of escape, comes close to being a real character; the intelligent and paradoxical Administrator Slayton Ford, who gives the fugitives their chance, is even more interesting. And the briefly seen aliens of other star systems are fascinating.

(P.S. Heinlein's latest "juvenile" for Scribners appeared as a serial in *F&SF*, get it sight unseen, and see how Heinlein's skill has richened and ripened.)

WAR WITH THE GIZMOS, by Murray Leinster. Gold Medal Books. No. S-751. 1958. 156 pp. 35¢

This is essentially one of the science-fiction novelettes that Murray Leinster used to write for *Argosy All-Story*, blown up to make a book. I don't mean that it's a reprint from those days—it's labeled a Gold Medal Original—but if you'd have spent a dime for *Argosy* during the depression, to read a routine Leinster battle-with-monsters yarn, you can afford thirty-five cents now. If you buy only the cream, and churn that to butter before you'll touch it, just pass the Gizmos by.

These ephemeral, invisible critters are gaseous organizations that feed on the various stinks—volatile organic compounds—generated in decay. (The theory of an invasion from outer space seems farfetched.) They have always been around in small numbers, killing people with attractively bad breaths, and folklore has had various traditions about them and techniques—garlic, asafetida, watch fires—for keeping them off. They've been responsible for blips on radar, and unexplained deaths from suffocation, and a variety of other things. Then one of them hit on the idea of producing their own carrion by killing animals; the new gimmick worked so well that there was a population explosion like the one at the beginning of the Neolithic, when men began to plant crops.

At this point, Dick Lane, sports-magazine writer, is hunting for the reason for mysterious deaths of animals, "without cause." He bumps into the cause—a flock of Gizmos in the Virginia mountains—and almost simultaneously into a middle-aged female professor with a pretty niece and a nondescript dog. They are attacked by Gizmos, study them, learn to kill them, learn how to evade them. They set out to warn the world, and are quite logically pooh-poohed: the world knows it's having some kind of epidemic. So, in a commandeered car, they run a cross-country gauntlet, outwitting the Gizmos chapter by chapter until they reach some open-minded scientists, the things they have learned are put to use, and the war with the Gizmos is over.

Ho, did you say, hum? Well, Murray Leinster loves his Virginia hills, so maybe the pastoral scenes are worth your 2.08 bits.

SEVEN REPRINTS

NO BLADE OF GRASS, by John Christopher. Pocket Books, No. 1183. 184 pp. 25¢. The quietly grim English SF novel that shook the *Saturday Evening Post.*

MISSION OF GRAVITY, by Hal Clement. Galaxy Science Fiction Novels No. 33. 191 pp. 35¢. One of the classics of recent *science* fiction, serialized right here in 1953. This one will never have to be "fixed."

RALPH 124C 41+by Hugo Gernsback. Crest Book, No. S-226. 142 pp. 35¢. Fletcher Pratt's foreword points out the only good reason for reading this 1911 novel: Hugo Gernsback's uncanny ability to foresee the necessary technology of the future. He was no storyteller, but he made Verne's predictions look like cribbing from an encyclopedia.

WALDO: GENIUS IN ORBIT, by Robert A. Heinlein. Avon Books. No. T-261. 191 pp. 35¢. The title of the hardback edition was "Waldo and Magic, Inc." The second part is the Unknown classic that takes magic in its stride; "Waldo" is the fat genius in his own satellite who has given his name to the mechanical manipulators used in nuclear labs.

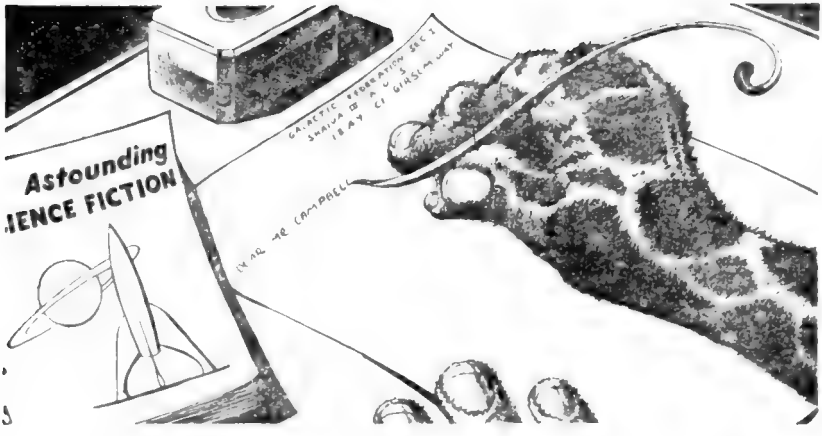
MEN, MARTIANS AND MACHINES, by Eric Frank Russell. Berkley Books. No. G-148. 174 pp. 35¢. The four Jay Score stories; not his best, perhaps, but memorable.

THE MIND CAGE, by A. E. van Vogt. Avon Books. No. T-252. 191 pp. 35¢. I guess some Van Vogt is better than no Van Vogt, but this is far from the standard of "Slan" and "Null A."

THE ISLAND OF DR. MOREAU, by H. G. Wells. Ace Books. No. D-309. 192 pp. 35¢. Demonstrating—if you'd forgotten—that Wells also pioneered in the mad-scientist, hairy-faced-monster brand of horror SF. Dr. Moreau carved animals into near-men.

THE END

BRASS



TACKS

Dear Mr. Campbell:

Here are the latest data compiled as a result of my investigation of the Hieronymus Machine, Symbolic Type III.

One hundred random-selection individuals (fifty male, fifty female) were subjects of the experiment. Admittedly, the age distribution is not very broad, but the results are significant nonetheless.

One by one, each subject was tested. I gave no information regarding the nature or purpose of the experiment. No subject was permitted to see the ink-on-paper circuitry of the Machine. All that was visible consisted of a plain masonite board (on the reverse side of which was drawn the circuitry of four Machines) and the steel sensor plate atop the sketched spiral coil.

I preferred to use "breadboard" style construction for two important reasons. I reasoned that if I sealed the circuitry inside an impressive

metal box equipped with electronic gadgetry, the psychological side-effect might prompt subjects to imagine or expect—false—sensations of electrical shock. Second, it is infinitely easier to construct several models of the Machine, if one does not have to go to the trouble and expense of fitting each into a metal container.

I considered it more advisable not to tell the subjects what sensations to expect—at the risk of thereby missing some positive subjects—for the reward of the certainty that those discovered were definitely sensitive. It was necessary to at least inform the subject that he was to report *any* sensation which might be felt in or on the hand. (The paresthesia is so subtle that it might pass unnoticed if the subject were not on the lookout for something.) My greatest problem was the fact that after the test was completed, and I told the seemingly negative subject what he might have felt, the reply was sometimes, "Oh, yes, I remember that, but I thought my hand was going to sleep." Then it was necessary to recheck and see if the hand "fell asleep" again at only certain dial points.

The tests consisted of six rotations of the prism, three times for each hand placed separately on the sensor plate.

The environment was not conducive to testing, and I am inclined to believe that there would have been more positive results, had the conditions been more nearly ideal. (This is not wishful thinking: subsequent rechecking of several reported negatives indicated that they were indeed positive.)

TABULATION

(Based on 100 persons, 50 male, 50 female.)

TABLE I

Total Percentage Positive, Negative

% Both Sexes	P.	N.	% Males	P.	N.	% Females	P.	N.
	25	75		8	44		17	31

TABLE II

Distribution of Reactions by Ages

Age	No. of Both Sexes	P.	N.	No. of Males	P.	N.	No. of Females	P.	N.
14		4	7		1	2		3	5
15		9	43		3	26		6	17
16		9	23		2	14		7	9
17		3	2		2	2		1	0
	Totals:	25	75		8	44		17	31

TABLE III

Number of Resonance Points

	No. who received Response at	1 pt.	2 pts.	3 pts.	4 pts.	5 pts.
MALES:		5	2	1	0	0
	No. who received Response at	1 pt.	2 pts.	3 pts.	4 pts.	5 pts.
FEMALES:		4	5	6	2	0
	Totals:	9	7	7	2	0

TABLE IV

Reaction-Type Count

Type	No. of reports from: Both Sexes	Males	Females
Heat	7	2	5
Cold	4	0	4
Tingling	16	6	10
Pulsing, Vibration	8	2	6
Totals:	35	10	25

Explanation of Table IV: The same subject often reported more than one reaction-type in a single test of six runs. The table indicates the number of persons that reported a particular type of paresthesia. It does *not* show how many times a single type was reported by *one* person. Thus, if a subject reported *heat* four times out of six runs, the table above shows *heat* once (for one subject report).

TABLE V

Frequency of Resonance Point Occurrence

Resonance Point (in degrees of arc, c. clkwse from 0°)	No. of Occurrences
10°	1
45°	19
90°	29
135°	7
140°	2
180°	2
225°	21
290°	16
315°	2
Total:	99

Explanation of Table V: A subject usually reported paresthesia more than once at the same dial position in a test of six runs. The table above shows the frequency or total number of times a particular point was reported during the *entire* experiment with 100 persons, six runs apiece.

CONCLUSIONS

1. From the data obtained in this limited experiment, it is evident that twenty-five per cent of the one hundred persons tested were positive. (This is a conservative figure.) Of them, eight per cent were male, seventeen per cent female. The remaining seventy-five per cent were negative or doubtful.

2. This is a significant number of positive results: there is little possibility of them being caused by chance, random guessing, or by autosuggestion.

3. The majority of responses occurred at only *one point* on the dial. (Out of a fantastic number of other possible points in the complete circle of rotation of the prism.)

4. The predominant report was that of a sort of electrical "tingling" in the palm or fingers of the hand on the plate. Some subjects received a reaction in only one hand.

5. The most "popular" reasonance points occur at approximately every 45° of prism rotation.

OTHER INFORMATION

I have noticed that the most sensitive subjects seem to report *heat,* the less sensitive feel *tingling;* then come *vibrations* (*pulsations*) and *coldness.* It may be that as the sensitivity of the subject increases, he senses more of the (presumed) pulses. This could mean that *heat* and *tingling,* e.g., differ in the number of pulses per second perceived (more in the former case, fewer in the latter). *Coldness* may be caused by out-of-phase frequencies.

To relate the Hieronymus Effect to anything electrical, as I have done above, is probably a mistake. But I cannot talk in terms which have not been invented or of which I cannot conceive. I personally believe that there is no electrical phenomenon involved. (No orthodox method of detecting or measuring the effect in terms of current or fields has worked for me.) Furthermore, there is a time delay between resonance and response; *the length of the threads connecting the Machine to the coil determines that time delay.* This is further evidence that the effect is not electrical-as-we-know-it. It is also good reason for *standardization:* it is time to print the Machines up uniformly and cut threads to a given length. This will make results obtained by independent experimenters resemble each other. (It should be clear that if the length of the threads can cause a time lapse of several seconds between resonance and reaction, notation of dial position for responses will vary between models of the Machine. Hence, independent results will not coincide in this respect.)

It has been clear to me for some time that if the Machine *radiates* anything, it must obtain its power from some place. (Note, my Type III model *does not* use a source of known input—no ore or mineral samples.) Possibly, it transforms known energy sources into unknown species of "power." (Ooops! That

implies the Machine does "work," and so far the device hasn't done anything to earn its keep.)

On the other hand, maybe it *absorbs*. This might explain why no electronic or orthodox meter has worked: it doesn't have the stuff the Machine eats!

There *is* one meter which has worked. I have successfully used a skin-resistance meter—sensitive ohmmeter—on test subjects. The meter needle deflects simultaneously when a reaction is reported. Unfortunately, this only proves my subjects are not lying to me: they honestly believe they feel something, and the meter verifies that. It is not an objective meter for the phenomenon, but a meter for the people instead, and therefore unsatisfactory.

IN CLOSING

The results obtained with the one hundred persons *should* be sufficient to stimulate extensive investigation, if only in an effort to refute the findings. And if anyone denies that there *are* findings, then explain why the hands of twenty-five people out of one hundred "fell asleep" consistently at certain points on a dial, and at no others.

If investigators will stop bothering their heads about why the Machine "cannot" work, some progress might be made toward getting this thing recognized.

One of my correspondents informs me that the United States Bureau of Patents is—as of this writing—temporarily *sold out of copies of the Hieronymus patent.* This would indicate that a lot of people are interested . . . or at least have tongue-in-cheek curiosity.

I would like to make this request: Would a few of those persons working on this project please compile and tabulate their results and let me know about them, or have them published? Unshared knowledge is practically worthless.

One humorous aspect of this affair: If the Machine consumes power from some source, then someone may have to pay for it. I am wondering if gremlins will materialize and stick me with a bill for all the power I have used . . .

And I don't even know what to pay them in!—David M. Dressler, K6MLE, 14833 Valerio Street, Van Nuys, California.

P.S.: I have been using those divining rods mentioned in the October, 1958 Astounding for an unusual purpose. They work fine for locating the direction in which my forty-foot high rotary beam antenna is facing . . . from inside the house.—D.

Perhaps the gremlins would merely demand that you pay them some attention?

Dear John:

As we discussed at the SOLACON, the second volume of "Index to the Science-Fiction Magazines," this one covering the years 1951 through 1957, is now in preparation.

Like the first volume, covering 1926 through 1950, this will be a hardcover book, covering not only Astounding SCIENCE FICTION but also all other science fiction and fantasy magazines published during the 1951-57 period. All stories and articles are listed alphabetically both by author and title and a checklist of all magazines indexed is included.

Norman Metcalf is indexing the magazines and I am adding the data on pseudonyms. As in the first volume, to insure correctness, only data from such first-hand sources as the authors themselves, editors and agents will be used.

Therefore, I would like to ask that any authors in the science fiction or fantasy fields who have used pen names, send the information to me at the address below. In the case of personal pseudonyms, the name alone is sufficient. Stories under "house names" should be listed with the byline under which each appeared.

Since work is now in progress on this, the sooner this information is received, the more certain it is of inclusion.

The INDEX TO THE SCIENCE FICTION MAGAZINES 1951-1957 will be ready sometime in 1959. Price after publication will be $8.50 but those ordering it or the first volume (1926-1950) before publication may obtain them at the prepublication price of $6.50.—Donald B. Day, c/o Perri Press, Box 5007, Portland 13, Oregon.

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repayment for all the help Don Day's first Index has been to us here at Astounding. We have an index of the material we published—but when someone asks about a story we didn't publish, it helps to be able to tell him who did!

Dear Sir:

I am very much concerned with the series of stories you have been printing which have to do with the power of the human mind alone to master the physical universe.

Let me delineate two polar philosophical standpoints. The first is the standpoint of consciousness. This standpoint holds that the essential human activity is providing content

This letter is run in Brass Tacks in

for consciousness—that is, so acting as to provide oneself with experiences. The standpoint of consciousness requires us to act more that we may experience more. The arena in which the acting and experiencing takes place is, of course, the outer (i.e., real) world. The modern champion of the standpoint of consciousness, which we may label scientific humanism, holds that the way to act more, is to increase our power over the physical universe. Hence the importance of the various sciences—including the social sciences—and technologies, which give us power over the physical universe and freedom from its restraints. At the present time the extreme spokesman of the standpoint of consciousness, is science fiction.

Opposing the standpoint of consciousness, is that of self-consciousness. This standpoint holds that the essential human activity is self-consciousness, the acts of introspection or self-contemplation. If we must act in the world, it is only to keep alive in order to allow more self-contemplation. Today's most important spokesman of self-consciousness is existentialism, for which the essential human activity is the examination of the phantasy life. The public world is, frankly, just about irrelevant.

Consciousness and self-consciousness notice the existence of each other and regard each other as enemies. Self-consciousness holds that consciousness, by refusing to recognize the inner (i.e. self-conscious) life turns men into mere things, machines which are oppressed by other machines. Consciousness on the other hand holds that self-consciousness makes the real world, which consciousness needs to gain its experiences, irrelevant and would turn us all into dreamers and loafers and would further wreck the material—including social and scientific—civilization which we have at such great pains achieved.

I have watched with interest the development of science fiction into the high priest of consciousness, and awaited its first encounter with the standpoint of self-consciousness. That day has come. In the last several issues, your writers have been presenting the notion that the mind, unaided, can master the physical universe. THE DAY IS COMING WHEN WISHES WILL COME TRUE WITHOUT ANY OTHER EFFORT BEYOND WISHING. THE SATISFACTIONS OF WISH FULFILLMENT WILL BE ACHIEVED WITHOUT RATIONAL ACTIVITY. This is the first and most important of the two steps by which science fiction will default from the camp of consciousness to the camp of self-consciousness. The second step is quite simple. If wish fulfillment is the important thing, and if the outer world is reluctant to so modify itself as to satisfy wishes, why not dispense with the outer world? We have already dispensed with science and technology, and with all activity beyond the mere act of wishing. It is a relative-

ly simple step to dispense with the outer world itself. Your writers are in short telling us to await the day when we may become a society of psychotics. I am alarmed at the implications of their stories and disapprove very strongly.

I might add that I cannot disprove conclusively the scientific hypothesis that the mind might under some circumstances be able to exert a limited power over a limited part of the physical universe; nor do I feel competent to oppose the expenditure of money on research in psionics, although I can easily think of better ways to spend the money. I seek merely to point out the dangerous consequences of the view that wishes alone can change the world—W. H. Friedman, 671 Elm Street, New Haven, Connecticut.

When brilliant, wise, and sincere men are in absolute disagreement, it's safe to assume that both camps are wrong. Wrong in being incomplete; there must be a third and more valid viewpoint that includes the validity of both of the seemingly exclusive views.

The mystics (all you need do is wish) are wrong—but the scientists (wishing has nothing to do with the matter!) are wrong, too. Energy the Scientist defines as "the ability to do work"—but an ability-without-expression is meaningless. The mystic is interested in the desire, and rejects the work.

Perhaps if the two got together, and studied the relationship between wishing-without-work, and ability - to - do - work - without-wishing some more rational answers might appear.

A machine must do what it can; Man differs in being able to do things, but not compelled to do them. The lout, the bum, is one who can wish, but isn't able to work.

We need more Men, and fewer bums and machines.

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Dear Mr. Campbell:

Your editorials in ASF are frequently titillating, usually challenging, always interesting and, once in a while hugely arousing; the November, 1958 editorial is all of these.

You realize, of course, that you are going to be strung from the highest yardarm, drawn and quartered and crucified for having invaded the sacrosanctum sanctorum of the head squeezers. I teach psychology, by the way. How can you possibly question the actions and statements of the think tank analysts? Only one fully *qualified* may do so. And, by definition, only the members of the profession are qualified. How dare you?

But, to get to the point of this letter, I think part of the fault is that of the public itself in adopting multiple standards. It is quite different, you know, to kill a person with a car than it is to kill the same person with a gun or a knife. In Cheyenne, Wyoming in 1949 a redoubtable gentleman who is such a poor risk that he cannot be insured, ran down a boy on a bicycle with his car. Killed the boy. Cost the gentleman fifty dollars. I had a number of encounters with this gentleman. Once I had to throw my car into reverse and back some twenty feet in a hurry to avoid letting him hit me. I knew I could have collected on his perpetual bond had I let him hit me but didn't want the trouble.

Let that same man or anyone else walk down the street putting people in the same measure of danger with a gun in his hand. He'd be in the klink in a hurry. Or a knife—HORRORS! I was in Anchorage in 1941 when a Filipino walked down the sidewalk waving a knife. About six of us tackled him, roughed him up a bit and hauled him off to jail. Can't tolerate such behavior, you know.

Double standards are not new, of course. And I suppose we will have them with us always. But relative emphasis changes. When I was a boy in the mountains of Montana, guns and knives were taken for granted. Some of the old-timers looked upon cars as evils. Guns and switchblade knives are now the evils. Such bosh! It isn't the gun or the switchblade knife or the car that does the damage. It's the damn fool that mishandles it. Rather, it is the *criminal*, compulsive or not, that mishandles it.

And the National Safety Council with its pap about the life you save being your own—makes me sick. Knuckle rapping and finger shaking should give way to a vigorous enforcement of realistic traffic—and other—laws designed to protect the public from these "compulsive" jackasses.

I could go on all night but I'm getting angry and I'm sure you have my point.

To get on to one other thing that bothers me: You select stories that are the best of their kind and I have no quarrel with most of them. One type of story does bother me. I hope I am not "anti-humanity" or anything of that sort, but I cannot help

being bothered by the type of story that places Terrans or Earthmen in the position of benevolently "helping" the inhabitants of another planet to modify their culture in such a way as to "improve" their way of life. Randall Garrett and Murray Leinster are two of the culprits. Can't think of titles off hand.

While the motives of the Terrans are the highest, I cannot help thinking this is the rawest kind of egotism. I feel much as Herman Melville did about the South Sea Islanders. Who are we to decide that someone else is unhappy in his native ignorance? Are we gods that we *know* what is good for them, as we know what is good for our children?

Another kind of story bothers me a bit. It is the type in which one lone, slightly neurotic—in the real sense—space jockey gets himself captured by the aliens of another planet—where he himself is the real alien—and by sheer bull and brain power baffles the somewhat stupid natives and gets them to provide him with a spaceship so he can relay word of their desire to capitulate to these wonderfully spectacular Earth people. Eric Frank Russell is guilty among others.

I enjoy these stories and read them avidly—really—but I class them more as phantasmagoria than as science fiction.

Any word yet on the Society? First issue of the Journal—when?

Since this is my first—and probably only—letter to you, you might be interested to know how I read ASF. First, your editorial (much cogitation, rumination, head shaking); second, Brass Tacks (much dismay when it isn't present); third, the article if any and especially if by Asimov or Richardson (or anybody else of note); fourth, the short stories (the familiar authors first, unknowns later); fifth, the novelettes (same sequence); sixth, the serial if any (I usually wait until I have all parts before I start. I hate like fury to quit reading at someone else's discretion); seventh, the Reference Library to see how smart PSM is; i.e., does he agree with my opinion? (I've already read most of what he

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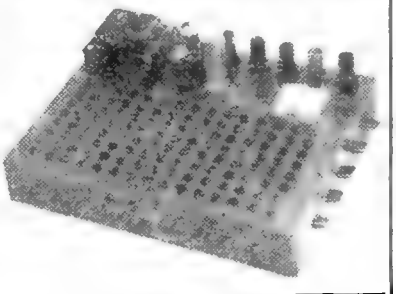

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discusses); eighth, miscellaneous bits and pieces as they appear to me.—Joseph D. Harper, Rantoul, Illinois.

Look, though—if we can be such neurotics and dunderheads—and God knows we are!—can't the aliens of other worlds be as confused? I think Russell's point is at least defensible!

Dear Mr. Campbell:

The 1959 World Science Fiction Convention—to be known as DETENTION—will be held in Detroit over the Labor Day week end, beginning in the evening of Friday, September 4th and continuing through Monday, September 7th—at the Fort Shelby Hotel.

This will be the 17th World Science Fiction Convention, and the first in three years close enough for most fans and pros in the East and Midwest to attend. Anyone interested in science fiction, or in fan activities, or in meeting their favorite authors, editors, and artists—or simply in having the time of their lives—all will be welcome.

The convention membership fee of $2—$1 for overseas—may be sent in advance to our treasurer, Jim Broderick, at 12011 Kilbourne, Detroit 13, Michigan. Hotel reservations should be sent directly to the Fort Shelby Hotel, 525 West Lafayette Blvd., Detroit 26, Michigan.

Don't wonder if you *can* be there. *Plan* to be there. You'll be glad you did, and we'll be expecting you.—THE DETENTION COMMITTEE, Fred Prophet & Roger Sims, Co-chairmen.

If you've never gone to one of the annual affairs—give it a whirl!

Dear Mr. Campbell:

Re: NOVELS.

Please, please don't continuum!—Mrs. D. Rees, 16110 Los Alimos Street, Granada Hills, California.

We continuum for lack of space, naturally.

Dear Mr. Campbell:

I've just read "Triggerman," in the December ASF. It's magnificent.

Any chance somebody can get it read into the Congressional Record?

It would be a whale of a good tale under any circumstances. Under present ones it had me jumping out of my skin.—Daniel Luzon Morris.

Should we say "Congressional Record please copy," as newspapers used to in the old days?

THE END

(*Continued from page 7*)

fission power to any major extent. And that's a prediction on which I'm not kidding. The only practical power-reaction for massive use is the deuterium fusion reaction; that, or the lithium-hydrogen reaction. Reason: those two reactions, properly managed, yield helium and energy, and helium is absolutely non-dangerous. Fission products can be tolerated only in small quantities; large quantities cost too much to dispose of. The fuel may be cheap—but the ashes are too damned expensive. Deuterium and lithium are cheaper, and the ashes can be safely dumped right in a man's face.

So we weren't kidding—and the discovery of that fact has lost us some readers. Since Astounding has, throughout its history as a Street & Smith magazine, never pretended it was kidding, and has, for twenty years, been the non-escape literature that seeks to meet the problems of tomorrow in the only possible way—"git them before they git you!"—Astounding has not suffered much. Nearly all of our readers have known right along that science fiction isn't fantasy, and isn't kidding. Hiroshima was an objective confirmation of what we already knew was real; Sputnik again confirmed the theoretical work we had done on the problems of tomorrow. They weren't frightening revelations; we hadn't been kidding ourselves, or anyone else.

But there are a lot of badly frightened people around. Some of those who decided to try science fiction after Sputnik went up must have left even faster than they came. If we weren't kidding when we talked about Sputnik . . . maybe we aren't kidding when we talk about aliens, Out There, who—horror incredible!—might be wiser and more powerful than Man.

It is not my intention to turn to "safe" fantasy—the escape-literature that certainly is becoming more and

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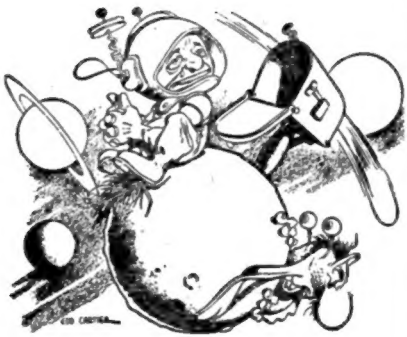

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more popular. Science fiction is not, and never will be a mass-appeal type of material; still, there are some who have the unusual characteristic of being able to enjoy a non-escape literature—who can look at a problem that hasn't slugged them over the head yet, and like thinking about it.

From the consistent, strong shout of "Take it away!" every time Astounding has tried a story verging on the fantasy side, I'm sure this audience doesn't want escape literature.

O.K., friends—stick around. We haven't been kidding—and we aren't going to kid anybody in the future.

Even if they do go on thinking we're kidding when we talk about antigravity, faster-than-light interstellar travel, and some other things we don't have *yet*.

Or . . . at least we don't have them yet *publicly*. But two friends of mine, both professional, recognized scientists, have separately, and circumstantially, reported watching a demonstration of an antigravity device that worked.

At the Los Angeles Science Fiction Convention in September, I stated my personal, present hunch. The first man to reach the Moon *may* get there with a rocket. But the first trips to the other planets will not be made by rockets. Not because rockets couldn't—but because the force field approach will intercept the line of rocket development.

And I'm not kidding on that, either.

THE EDITOR.

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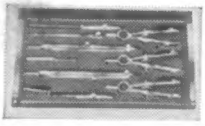

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